

**UK MET OFFICE  
GLOBAL DATA MONITORING REPORT**

**November 2005**

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### 1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Exeter. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Exeter in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background) field, although to provide background values valid at the observation time for non-main hour data, time-interpolation of the T+3, T+6 and T+9 forecasts is used; and for sea surface temperature the background field is the analysis from the previous day. Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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### 2 Global Data Monitoring Statistics

#### Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1 and 2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or sea surface temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Exeter and assimilated into model runs. All data are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

#### Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

#### Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.



Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Exeter and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of  $>60 \text{ m s}^{-1}$  have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average  $>0$  but  $<0.5$ , then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference  $> 60 \text{ m s}^{-1}$  have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing  $<31$  observations.

Figure    Parameter

- |   |                                                         |
|---|---------------------------------------------------------|
| 4 | Mean wind vectors                                       |
| 5 | Mean observation - background wind vector               |
| 6 | Mean observation-background speed ( $\text{m s}^{-1}$ ) |
| 7 | RMS observation-background vector ( $\text{m s}^{-1}$ ) |

### Radioonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Exeter and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average  $>0$  but  $<0.5$ , then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

### Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are  $> 10$  observations in a 10 degree lat/long box.

| Figure | Parameter Plotted                             | Layer (hPa) |
|--------|-----------------------------------------------|-------------|
| 10     | Availability/average daily number             | 701-1000    |
| 11     | Vector mean wind (observed)                   | 701-1000    |
| 12     | Observation-background vector wind difference | 701-1000    |
| 13     | Mean observation-background speed differences | 701-1000    |
| 14     | RMS observation-background vector difference  | 701-1000    |
| 15     | Availability/average daily number             | 401-700     |
| 16     | Vector mean wind (observed)                   | 401-700     |
| 17     | Observation-background vector wind difference | 401-700     |
| 18     | Mean observation-background speed differences | 401-700     |
| 19     | RMS observation-background vector difference  | 401-700     |
| 20     | Availability/average daily number             | 101-400     |
| 21     | Vector mean wind (observed)                   | 101-400     |
| 22     | Observation-background vector wind difference | 101-400     |
| 23     | Mean observation-background speed differences | 101-400     |
| 24     | RMS observation-background vector difference  | 101-400     |

Figures 25-39 show sounding statistics from the polar orbiting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

| Figure |      | Weighting function peak (hPa) |
|--------|------|-------------------------------|
| 26     | Mean | Surface (HIRS8)               |
| 27     | SD   | Surface (HIRS8)               |
| 28     | Mean | 700 (HIRS15)                  |
| 29     | SD   | 700 (HIRS15)                  |
| 30     | Mean | 500-700 (HIRS11)              |
| 31     | SD   | 500-700 (HIRS11)              |
| 32     | Mean | 400 (HIRS4)                   |
| 33     | SD   | 400 (HIRS4)                   |
| 34     | Mean | 700 (AMSUA5)                  |
| 35     | SD   | 700 (AMSUA5)                  |
| 36     | Mean | 300 (AMSUA7)                  |
| 37     | SD   | 300 (AMSUA7)                  |
| 38     | Mean | 100 (AMSUA9)                  |
| 39     | RMS  | 100 (AMSUA9)                  |

Figures 40-54 show sounding statistics from the polar orbiting satellite NOAA-16. Figure 40 shows the mean daily number of ATOVS soundings, and figures 41-54 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

| Figure |      | Weighting function peak (hPa) |
|--------|------|-------------------------------|
| 41     | Mean | Surface (HIRS8)               |
| 42     | SD   | Surface (HIRS8)               |
| 43     | Mean | 700 (HIRS15)                  |
| 44     | SD   | 700 (HIRS15)                  |
| 45     | Mean | 500-700 (HIRS11)              |
| 46     | SD   | 500-700 (HIRS11)              |
| 47     | Mean | 400 (HIRS4)                   |
| 48     | SD   | 400 (HIRS4)                   |
| 49     | Mean | 700 (AMSUA5)                  |
| 50     | SD   | 700 (AMSUA5)                  |
| 51     | Mean | 300 (AMSUA7)                  |
| 52     | SD   | 300 (AMSUA7)                  |
| 53     | Mean | 100 (AMSUA9)                  |
| 54     | RMS  | 100 (AMSUA9)                  |

Figures 55-69 show sounding statistics from the polar orbiting satellite NOAA-17. Figure 55 shows the mean daily number of ATOVS soundings, and figures 56-69 show mean and standard deviation observation-background differences for brightness temperature for selected channels.

| Figure |      | Weighting function peak (hPa) |
|--------|------|-------------------------------|
| 56     | Mean | Surface (HIRS8)               |
| 57     | SD   | Surface (HIRS8)               |
| 58     | Mean | 700 (HIRS15)                  |
| 59     | SD   | 700 (HIRS15)                  |
| 60     | Mean | 500-700 (HIRS11)              |
| 61     | SD   | 500-700 (HIRS11)              |
| 62     | Mean | 400 (HIRS4)                   |
| 63     | SD   | 400 (HIRS4)                   |
| 64     | Mean | 700 (AMSUA5)                  |
| 65     | SD   | 700 (AMSUA5)                  |
| 66     | Mean | 300 (AMSUA7)                  |
| 67     | SD   | 300 (AMSUA7)                  |
| 68     | Mean | 100 (AMSUA9)                  |
| 69     | RMS  | 100 (AMSUA9)                  |

N.B. All satellite sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

### 3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Exeter during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Exeter in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Exeter from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics (**Geopotential Height and Windspeed at 100 and 500 hPa**) for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.



## Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPS, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.
22. November 2000. An error in the production of Table 6 was corrected. Previously, some sondes with suspect vector winds were being missed.
23. April 2001. Included statistics for ATOVS sounding data from NOAA-16.
24. May 2001. Included statistics for sea surface temperatures from marine surface observations.
25. December 2002. Included statistics for ATOVS sounding data from NOAA-17.
26. December 2002. Meteosat-7 and Meteosat-5 SATOB winds replaced by higher resolution BUFR-coded winds.
27. November 2003. Included temperature and relative humidity statistics for ships, fixed buoys and platforms in Table 1.
28. November 2003. NOAA 17 statistics no longer available due to malfunction of the AMSU-A instrument.





**TABLE 1**  
**MONITORING OF MARINE SURFACE OBSERVATIONS**  
**MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS**  
**MONITORING CENTRE: EXETER**  
**MONTH: Nov 2005**

**Monitoring procedures**

|                        |                                                                                                                                                                                                        |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Period                 | :One calendar month.                                                                                                                                                                                   |
| Data monitored         | :Reports from each unique identifier for ships, fixed buoys and platforms.                                                                                                                             |
| Standard of comparison | :Background field from UKMO global model.                                                                                                                                                              |
| Observation times      | :All hours                                                                                                                                                                                             |
| Elements monitored     | :Mean sea level pressure (hPa).<br>:Wind speed ( $\text{m s}^{-1}$ ).<br>:Wind direction (Degrees).<br>:Air temperature (Degrees C).<br>:Relative Humidity (%).<br>:Sea surface temperature (Degrees). |

**Parameters monitored**

|       |                                                                                                                                                                                       |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| :NOBS | :Number of observations received excluding duplicates.                                                                                                                                |
| :PGE  | :Percentage of observations with gross errors.                                                                                                                                        |
| :%REJ | :Percentage of observations flagged excluding those with gross errors.                                                                                                                |
| :SD   | :SD of difference of observations from background values excluding those with gross errors.                                                                                           |
| :BIAS | :Mean difference of observations from background values excluding those with gross errors.<br><b>N.B. a positive bias indicates the wind observation is veered to the background.</b> |
| :RMS  | :Root Mean Square difference of observations from background values excluding those with gross errors.                                                                                |

**GROSS ERROR LIMIT**

:15 hPa (pressure)  
:25  $\text{m s}^{-1}$  (vector wind)  
:15 degrees (air temperature)  
:10 degrees (sea surface temperature)

**SELECTION CRITERIA**

:NOBS  $\geq 20$ , and one or more of the following:

|          |                                                                                                                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  bias | $\geq 4$ hPa (pressure),<br>$\geq 5 \text{ m s}^{-1}$ (wind speed),<br>$\geq 30$ degrees (direction).<br>$\geq 3$ degrees (sea surface temperature).<br>$\geq 4$ degrees (air temperature)<br>$\geq 15\%$ (relative humidity) |
| 2. SD    | $\geq 6$ hPa (pressure),<br>$\geq 80$ degrees (direction).<br>$\geq 5$ degrees (sea surface temperature).<br>$\geq 6$ degrees (air temperature)<br>$\geq 25\%$ (relative humidity)                                            |
| 3. PGE   | $\geq 25$                                                                                                                                                                                                                     |

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed  $> 5 \text{ m s}^{-1}$

| IDENTIFIER | ELEM  | NOBS | PGE | %REJ | SD    | BIAS  | RMS   |
|------------|-------|------|-----|------|-------|-------|-------|
| A8FR5      | P     | 37   | 0   | 92   | 1.0   | 5.6   | 5.7   |
| C6FZ6      | P     | 29   | 0   | 10   | 1.0   | 6.2   | 6.3   |
| C6NL6      | P     | 31   | 0   | 94   | 0.9   | 5.8   | 5.9   |
| C6PZ3      | P     | 56   | 0   | 100  | 1.3   | 6.8   | 7.0   |
| DBUT       | P     | 42   | 0   | 76   | 1.7   | 4.5   | 4.8   |
| DCFG2      | P     | 26   | 0   | 0    | 1.1   | 5.0   | 5.1   |
| DQVO       | P     | 46   | 0   | 50   | 0.9   | -4.3  | 4.4   |
| ELVX9      | P     | 67   | 0   | 55   | 1.1   | 4.2   | 4.4   |
| KS049      | P     | 230  | 0   | 0    | 1.0   | -4.5  | 4.6   |
| PCBU       | P     | 21   | 0   | 38   | 1.3   | 4.0   | 4.2   |
| PINX       | P     | 26   | 0   | 88   | 3.3   | 8.7   | 9.3   |
| UANF       | P     | 43   | 0   | 91   | 1.0   | 4.9   | 5.0   |
| UCJE       | P     | 24   | 0   | 100  | 1.6   | -7.2  | 7.4   |
| UCUE       | P     | 28   | 0   | 54   | 1.5   | -4.0  | 4.3   |
| UGNQ       | P     | 72   | 0   | 63   | 0.9   | -4.5  | 4.6   |
| V2AC9      | P     | 24   | 0   | 4    | 1.2   | -4.8  | 4.9   |
| V2AW5      | P     | 46   | 4   | 52   | 2.2   | 5.3   | 5.7   |
| V7FW8      | P     | 32   | 0   | 66   | 1.2   | 5.1   | 5.3   |
| WAQ3521    | P     | 27   | 7   | 93   | 3.6   | -5.0  | 6.1   |
| WBN7617    | P     | 143  | 1   | 52   | 6.1   | 1.2   | 6.2   |
| WCY2853    | P     | 39   | 3   | 44   | 2.0   | 4.6   | 5.0   |
| WDB9918    | P     | 39   | 0   | 77   | 3.2   | -4.5  | 5.6   |
| WYT8569    | P     | 42   | 0   | 62   | 2.7   | 4.2   | 5.0   |
| ZCBN9      | P     | 65   | 0   | 17   | 0.7   | 4.7   | 4.7   |
| IDENTIFIER | ELEM  | NOBS | PGE | %REJ | SD    | BIAS  | RMS   |
| A8FI3      | SPEED | 22   | 0   | 14   | 4.2   | 5.4   | 6.9   |
| A8GS3      | SPEED | 59   | 0   | 59   | 4.4   | 10.1  | 11.0  |
| DSHIPD     | SPEED | 21   | 0   | 14   | 3.3   | 5.5   | 6.4   |
| MDGV9      | SPEED | 23   | 0   | 4    | 3.9   | 6.9   | 7.9   |
| OXRA6      | SPEED | 27   | 0   | 100  | 3.2   | 5.6   | 6.4   |
| UCFT       | SPEED | 25   | 0   | 8    | 2.2   | 5.5   | 6.0   |
| VEP717     | SPEED | 222  | 0   | 2    | 4.7   | 5.9   | 7.6   |
| VNSZ       | SPEED | 138  | 0   | 54   | 4.0   | 5.0   | 6.4   |
| VROB       | SPEED | 76   | 0   | 63   | 4.6   | 5.4   | 7.1   |
| WDA3588    | SPEED | 135  | 0   | 77   | 4.4   | 7.6   | 8.8   |
| IDENTIFIER | ELEM  | NOBS | PGE | %REJ | SD    | BIAS  | RMS   |
| CFN3031    | DIRN. | 99   | 2   | 0    | 14.4  | -88.9 | 90.1  |
| KS044      | DIRN. | 26   | 0   | 0    | 13.7  | -89.3 | 90.4  |
| LAJV4      | DIRN. | 106  | 15  | 0    | 48.0  | 77.1  | 90.8  |
| LAZV5      | DIRN. | 33   | 9   | 0    | 62.5  | -54.5 | 83.0  |
| ONAT       | DIRN. | 21   | 5   | 0    | 62.0  | 37.7  | 72.6  |
| VRVP2      | DIRN. | 34   | 3   | 0    | 57.6  | -53.3 | 78.4  |
| 3FMH7      | DIRN. | 41   | 0   | 0    | 50.7  | -33.0 | 60.5  |
| 42023      | DIRN. | 300  | 1   | 0    | 131.3 | -11.7 | 131.8 |
| 53057      | DIRN. | 108  | 0   | 0    | 30.2  | ***** | 123.9 |
| IDENTIFIER | ELEM  | NOBS | PGE | %REJ | SD    | BIAS  | RMS   |
| CGBN       | T     | 465  | 3   | 100  | 3.9   | 4.1   | 5.7   |
| CYLY       | T     | 22   | 0   | 100  | 1.9   | 4.1   | 4.6   |
| KCB53      | T     | 20   | 0   | 100  | 2.7   | -6.6  | 7.1   |
| KS011      | T     | 41   | 51  | 100  | 8.2   | -3.8  | 9.1   |
| KS044      | T     | 30   | 100 | 100  |       |       |       |
| VAAZ       | T     | 72   | 90  | 100  | 0.4   | -14.1 | 14.1  |
| WCW9126    | T     | 107  | 7   | 100  | 3.6   | 8.2   | 8.9   |
| WDC6925    | T     | 37   | 0   | 100  | 3.3   | -4.3  | 5.4   |
| WXJ63      | T     | 220  | 0   | 100  | 3.7   | 4.2   | 5.6   |
| 45136      | T     | 470  | 5   | 100  | 2.3   | 9.4   | 9.7   |
| 46081      | T     | 686  | 2   | 100  | 3.1   | 8.1   | 8.7   |

|            |      |      |     |      |      |       |      |
|------------|------|------|-----|------|------|-------|------|
| 46131      | T    | 690  | 0   | 100  | 2.2  | 4.5   | 5.1  |
| 46146      | T    | 690  | 0   | 100  | 1.9  | 4.1   | 4.5  |
| 46181      | T    | 688  | 0   | 100  | 2.4  | 4.0   | 4.7  |
| IDENTIFIER | ELEM | NOBS | PGE | %REJ | SD   | BIAS  | RMS  |
| A8DO8      | RH   | 39   | 0   | 100  | 9.7  | 15.4  | 18.2 |
| A8FZ5      | RH   | 31   | 0   | 100  | 17.9 | -23.0 | 29.2 |
| C6FM7      | RH   | 56   | 0   | 100  | 5.3  | 17.7  | 18.5 |
| DGCR       | RH   | 680  | 0   | 100  | 13.0 | -26.4 | 29.4 |
| ELOV9      | RH   | 32   | 0   | 100  | 8.7  | 15.3  | 17.6 |
| FNAT       | RH   | 72   | 0   | 100  | 7.9  | 21.5  | 22.9 |
| JDAI       | RH   | 40   | 0   | 100  | 5.9  | 16.6  | 17.6 |
| MSHE2      | RH   | 55   | 0   | 100  | 7.5  | 15.1  | 16.8 |
| MYTA7      | RH   | 38   | 0   | 100  | 9.6  | 15.7  | 18.4 |
| OUEX       | RH   | 36   | 0   | 100  | 20.2 | -42.4 | 47.0 |
| OXYH2      | RH   | 26   | 0   | 100  | 13.4 | -17.2 | 21.8 |
| PINX       | RH   | 25   | 0   | 100  | 7.6  | -15.1 | 16.9 |
| PJJH       | RH   | 23   | 0   | 100  | 11.2 | 15.7  | 19.2 |
| SHIPX      | RH   | 30   | 0   | 100  | 4.3  | 16.4  | 17.0 |
| VRVN6      | RH   | 27   | 0   | 100  | 17.4 | 17.3  | 24.5 |
| 62107      | RH   | 29   | 0   | 100  | 17.3 | -23.8 | 29.4 |
| 62125      | RH   | 166  | 0   | 100  | 10.3 | 15.6  | 18.7 |
| 62140      | RH   | 32   | 0   | 100  | 7.2  | 17.7  | 19.1 |
| IDENTIFIER | ELEM | NOBS | PGE | %REJ | SD   | BIAS  | RMS  |
| C6RJ6      | SST  | 34   | 0   | 100  | 0.8  | -3.2  | 3.3  |
| DGRF       | SST  | 49   | 0   | 67   | 1.6  | 4.0   | 4.3  |
| DIBZ       | SST  | 33   | 0   | 42   | 0.5  | -3.0  | 3.0  |
| ELSM9      | SST  | 71   | 10  | 100  | 1.2  | -6.8  | 6.9  |
| ELZW9      | SST  | 27   | 0   | 100  | 0.5  | 3.0   | 3.0  |
| H9HU       | SST  | 36   | 25  | 81   | 2.8  | -2.3  | 3.6  |
| KHRC       | SST  | 58   | 0   | 100  | 0.9  | -5.3  | 5.3  |
| KS049      | SST  | 203  | 0   | 109  | 2.5  | -4.6  | 5.3  |
| LAIP5      | SST  | 64   | 0   | 70   | 0.7  | -3.5  | 3.5  |
| LAVV4      | SST  | 33   | 0   | 48   | 1.2  | -3.7  | 3.9  |
| LF5T       | SST  | 207  | 0   | 45   | 4.4  | -4.2  | 6.1  |
| S6IW       | SST  | 51   | 0   | 100  | 0.9  | -5.7  | 5.8  |
| UCCH       | SST  | 20   | 10  | 45   | 2.0  | -3.4  | 3.9  |
| UCMR       | SST  | 28   | 0   | 32   | 1.8  | -3.3  | 3.8  |
| UFJC       | SST  | 28   | 7   | 100  | 1.6  | -4.5  | 4.8  |
| UFSF       | SST  | 27   | 0   | 37   | 0.7  | -4.0  | 4.0  |
| UGGA       | SST  | 36   | 0   | 100  | 1.9  | -3.3  | 3.8  |
| V2AC6      | SST  | 27   | 0   | 100  | 1.0  | 3.8   | 3.9  |
| WAAH       | SST  | 83   | 0   | 100  | 1.2  | 3.0   | 3.2  |
| WCZ5528    | SST  | 69   | 0   | 71   | 2.2  | -4.2  | 4.7  |
| WE4805     | SST  | 43   | 0   | 109  | 1.2  | -3.3  | 3.5  |
| WMLH       | SST  | 36   | 0   | 6    | 0.7  | 3.0   | 3.1  |
| WSRH       | SST  | 27   | 0   | 100  | 1.3  | -3.4  | 3.6  |
| WZJD       | SST  | 44   | 0   | 100  | 0.8  | -3.7  | 3.8  |
| ZMFR       | SST  | 128  | 79  | 100  | 0.3  | -9.0  | 9.0  |
| 41035      | SST  | 906  | 0   | 86   | 0.9  | -3.9  | 4.0  |
| 44014      | SST  | 663  | 0   | 58   | 0.6  | -3.1  | 3.2  |
| 61298      | SST  | 432  | 100 | 100  |      |       |      |
| 61299      | SST  | 465  | 100 | 100  |      |       |      |
| 61300      | SST  | 136  | 100 | 100  |      |       |      |
| 61301      | SST  | 263  | 100 | 100  |      |       |      |
| 61302      | SST  | 240  | 100 | 100  |      |       |      |
| 61303      | SST  | 275  | 100 | 100  |      |       |      |
| 61304      | SST  | 280  | 100 | 100  |      |       |      |
| 61305      | SST  | 178  | 100 | 100  |      |       |      |
| 61306      | SST  | 203  | 100 | 100  |      |       |      |
| 61307      | SST  | 195  | 100 | 100  |      |       |      |
| 61308      | SST  | 161  | 100 | 100  |      |       |      |
| 61309      | SST  | 232  | 100 | 100  |      |       |      |

|       |     |     |     |     |     |      |     |
|-------|-----|-----|-----|-----|-----|------|-----|
| 61310 | SST | 244 | 100 | 100 |     |      |     |
| 61311 | SST | 238 | 100 | 100 |     |      |     |
| 61312 | SST | 208 | 100 | 100 |     |      |     |
| 61313 | SST | 251 | 100 | 100 |     |      |     |
| 61314 | SST | 256 | 100 | 100 |     |      |     |
| 9HQB6 | SST | 44  | 2   | 75  | 2.9 | -3.7 | 4.7 |



Figure 1. SHIP/SYNOP mean daily count. NOVEMBER 2005  
All hours  
Global average number of observations in 24 hours = 20804

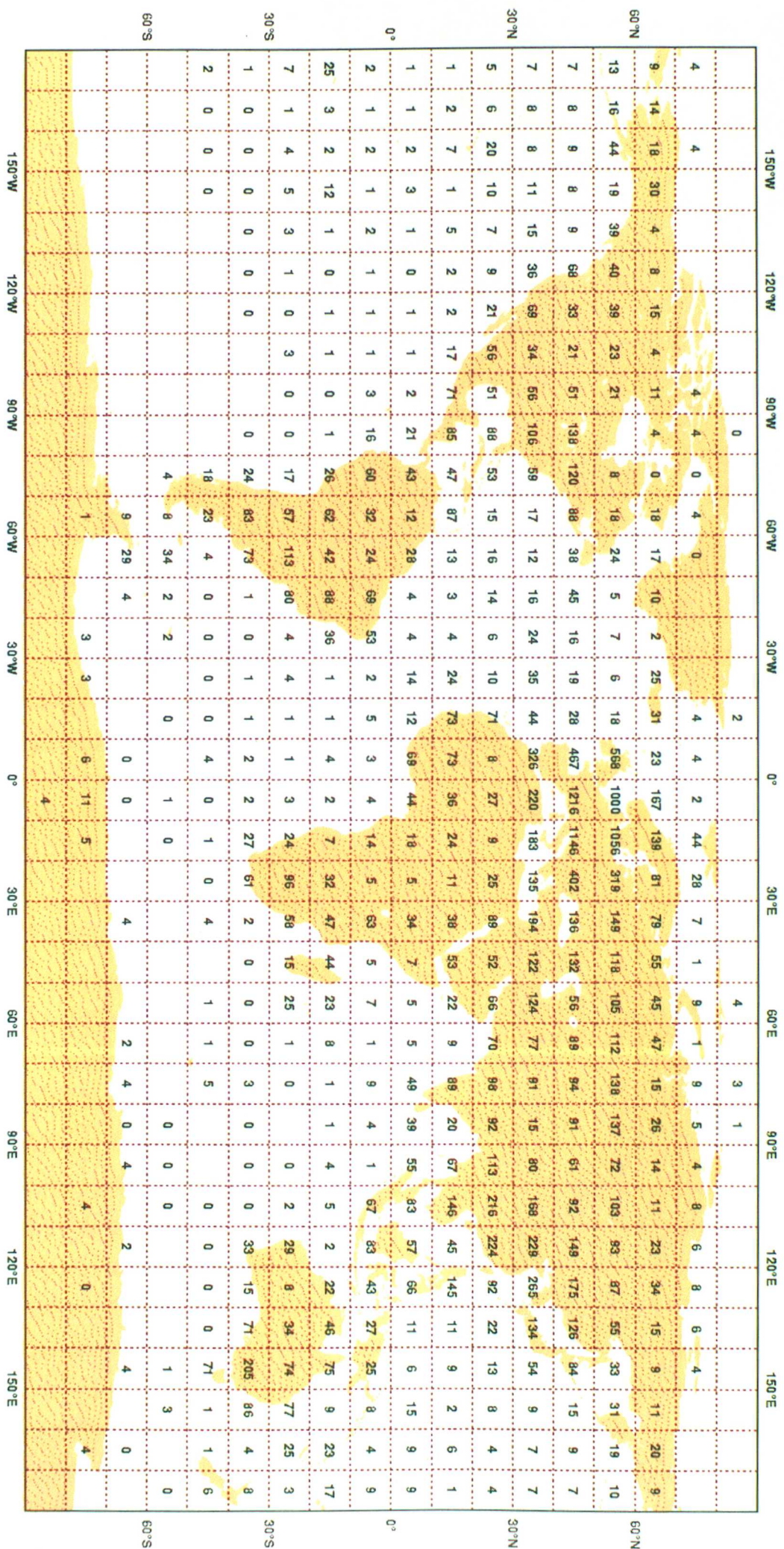


**TABLE 2**  
**MONITORING OF MARINE SURFACE OBSERVATIONS**  
**MONTHLY SUSPECT LIST - DRIFTING BUOYS**  
**MONITORING CENTRE: EXETER**  
**MONTH: Nov 2005**

**Monitoring procedures**

|                               |                                                                                                                                            |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Period</b>                 | :One calendar month.                                                                                                                       |
| <b>Data monitored</b>         | :Reports from each unique identifier for drifting buoys.                                                                                   |
| <b>Standard of comparison</b> | :Background field from UKMO global model.                                                                                                  |
| <b>Position</b>               | :Average latitude and longitude for period.                                                                                                |
| <b>Observation times</b>      | : All hours                                                                                                                                |
| <b>Elements monitored</b>     | :Mean sea level pressure (hPa).<br>:Wind speed ( $\text{m s}^{-1}$ ).<br>:Wind direction (degrees).<br>:Sea surface temperature (degrees). |

**Parameters monitored**

|       |                                                                                                                                                                                       |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| :NOBS | :Number of observations received excluding duplicates.                                                                                                                                |
| :PGE  | :Percentage of observations with gross errors.                                                                                                                                        |
| :%REJ | : Percentage of observations flagged excluding those with gross errors                                                                                                                |
| :SD   | :SD of difference of observations from background values excluding those with gross errors.                                                                                           |
| :BIAS | :Mean difference of observations from background values excluding those with gross errors.<br><b>N.B. a positive bias indicates the wind observation is veered to the background.</b> |
| :RMS  | :Root Mean Square difference of observations from background values excluding those with gross errors.                                                                                |

|                          |                                       |
|--------------------------|---------------------------------------|
| <b>GROSS ERROR LIMIT</b> | :15 hPa (pressure)                    |
|                          | :25 $\text{m s}^{-1}$ (vector wind)   |
|                          | :10 degrees (sea surface temperature) |

|                             |         |                                                                                                                                                      |
|-----------------------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SELECTION CRITERIA :</b> | NOBS    | $\geq 20$ , and one or more of the following:                                                                                                        |
|                             | 1. bias | $\geq 4$ hPa (pressure),<br>$\geq 5 \text{ m s}^{-1}$ (wind speed),<br>$\geq 30$ degrees (direction).<br>$\geq 3$ degrees (sea surface temperature). |
|                             | 2.SD    | $\geq 6$ hPa (pressure),<br>$\geq 80$ degrees (direction).<br>$\geq 5$ degrees (sea surface temperature).                                            |
|                             | 3.PGE   | $\geq 25$ .                                                                                                                                          |

**N.B.** Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed  $> 5 \text{ m s}^{-1}$



| IDENTIFIER | LAT. | LONG.  | ELEM | NOBS | PGE | %REJ | SD  | BIAS | RMS  |
|------------|------|--------|------|------|-----|------|-----|------|------|
| 21929      | 33.0 | -175.6 | P    | 316  | 35  | 92   | 3.7 | -9.4 | 10.1 |
| 21942      | 37.0 | 157.0  | P    | 170  | 19  | 100  | 4.9 | 7.4  | 8.8  |
| 21953      | 36.1 | 156.3  | P    | 406  | 5   | 51   | 6.5 | -2.1 | 6.9  |
| 21964      | 33.9 | 157.9  | P    | 271  | 0   | 94   | 2.5 | 7.9  | 8.3  |
| 23949      | 5.1  | 50.2   | P    | 361  | 100 | 100  |     |      |      |

|       |      |       |   |     |    |     |     |      |      |
|-------|------|-------|---|-----|----|-----|-----|------|------|
| 23950 | 4.7  | 91.8  | P | 313 | 95 | 100 | 6.7 | -7.4 | 10.0 |
| 25574 | 86.6 | 72.7  | P | 21  | 33 | 100 | 7.4 | 0.1  | 7.4  |
| 44840 | 61.9 | -15.6 | P | 179 | 32 | 66  | 6.9 | -0.3 | 6.9  |

| IDENTIFIER | LAT. | LONG. | ELEM  | NOBS | PGE | %REJ | SD  | BIAS | RMS  |
|------------|------|-------|-------|------|-----|------|-----|------|------|
| 41919      | 24.0 | -93.7 | SPEED | 382  | 0   | 100  | 3.6 | 11.6 | 12.2 |
| 41923      | 22.4 | -92.3 | SPEED | 44   | 2   | 100  | 5.2 | 5.7  | 7.7  |
| 41930      | 25.0 | -90.9 | SPEED | 257  | 30  | 100  | 8.0 | 9.3  | 12.2 |
| 41934      | 29.0 | -74.2 | SPEED | 32   | 44  | 100  | 6.4 | 5.5  | 8.4  |
| 41936      | 27.1 | -96.4 | SPEED | 124  | 3   | 100  | 5.9 | 5.8  | 8.3  |

|       |      |       |       |     |    |     |     |      |      |
|-------|------|-------|-------|-----|----|-----|-----|------|------|
| 41939 | 39.4 | -57.1 | SPEED | 33  | 55 | 100 | 8.9 | 6.1  | 10.8 |
| 41940 | 25.1 | -93.4 | SPEED | 218 | 10 | 100 | 5.2 | 14.2 | 15.1 |
| 41942 | 25.1 | -93.8 | SPEED | 236 | 11 | 100 | 7.0 | 10.5 | 12.6 |
| 41943 | 24.8 | -96.0 | SPEED | 183 | 26 | 100 | 8.0 | 9.7  | 12.6 |
| 41945 | 22.5 | -92.0 | SPEED | 170 | 6  | 100 | 6.8 | 8.1  | 10.6 |

| IDENTIFIER | LAT. | LONG. | ELEM  | NOBS | PGE | %REJ | SD   | BIAS  | RMS   |
|------------|------|-------|-------|------|-----|------|------|-------|-------|
| 41542      | 26.8 | -76.0 | DIRN. | 225  | 0   | 0    | 19.6 | 123.6 | 125.2 |
| 41934      | 29.0 | -74.2 | DIRN. | 24   | 58  | 0    | 92.8 | 37.2  | 100.0 |

| IDENTIFIER | LAT.  | LONG. | ELEM | NOBS | PGE | %REJ | SD  | BIAS | RMS |
|------------|-------|-------|------|------|-----|------|-----|------|-----|
| 15502      | -16.0 | -14.4 | SST  | 475  | 0   | 100  | 0.1 | -3.5 | 3.5 |
| 15504      | -15.0 | -18.1 | SST  | 534  | 0   | 100  | 0.2 | -3.6 | 3.6 |
| 15510      | -13.5 | -24.9 | SST  | 537  | 0   | 100  | 0.2 | -3.8 | 3.8 |
| 15649      | -18.8 | -19.4 | SST  | 609  | 0   | 100  | 0.3 | -3.5 | 3.6 |
| 21515      | 39.0  | 135.2 | SST  | 121  | 100 | 100  |     |      |     |

|       |      |       |     |     |   |    |     |      |     |
|-------|------|-------|-----|-----|---|----|-----|------|-----|
| 21599 | 39.3 | 135.0 | SST | 400 | 0 | 79 | 1.0 | -3.3 | 3.4 |
| 21937 | 40.9 | 140.3 | SST | 336 | 9 | 54 | 3.8 | -3.5 | 5.2 |
| 21954 | 41.4 | 161.7 | SST | 546 | 0 | 58 | 1.3 | -3.0 | 3.2 |
| 22534 | 21.5 | 119.8 | SST | 206 | 0 | 96 | 0.7 | -3.5 | 3.6 |
| 22535 | 22.2 | 121.0 | SST | 199 | 0 | 99 | 0.7 | -3.7 | 3.8 |

|       |      |        |     |     |    |     |     |      |     |
|-------|------|--------|-----|-----|----|-----|-----|------|-----|
| 22536 | 19.7 | 120.0  | SST | 147 | 7  | 100 | 0.3 | -4.8 | 4.8 |
| 22538 | 19.2 | 121.2  | SST | 171 | 0  | 100 | 0.4 | -5.1 | 5.1 |
| 22573 | 22.4 | 120.3  | SST | 31  | 0  | 65  | 2.4 | -4.3 | 4.9 |
| 22909 | 20.9 | 117.4  | SST | 274 | 45 | 65  | 2.4 | -2.3 | 3.3 |
| 32538 | -8.5 | -160.7 | SST | 616 | 0  | 100 | 0.3 | -4.2 | 4.3 |

|       |      |        |     |     |   |     |     |      |     |
|-------|------|--------|-----|-----|---|-----|-----|------|-----|
| 32620 | -8.3 | -175.3 | SST | 612 | 0 | 100 | 0.4 | -4.3 | 4.3 |
| 32803 | 0.3  | -104.6 | SST | 363 | 0 | 78  | 0.8 | -3.4 | 3.5 |
| 32805 | 1.5  | -89.9  | SST | 410 | 0 | 98  | 0.6 | -3.6 | 3.6 |
| 32815 | -5.6 | -98.7  | SST | 340 | 0 | 99  | 0.5 | -3.7 | 3.7 |
| 32816 | -9.1 | -95.9  | SST | 362 | 0 | 100 | 0.2 | -3.5 | 3.5 |

|       |       |        |     |     |    |     |     |      |     |
|-------|-------|--------|-----|-----|----|-----|-----|------|-----|
| 32819 | -0.2  | -95.7  | SST | 307 | 0  | 76  | 1.4 | -3.5 | 3.8 |
| 32821 | -7.8  | -100.8 | SST | 329 | 0  | 100 | 0.3 | -3.6 | 3.6 |
| 32823 | 4.4   | -81.1  | SST | 182 | 0  | 99  | 0.3 | -3.8 | 3.8 |
| 32829 | -2.8  | -93.7  | SST | 181 | 0  | 100 | 0.2 | -3.3 | 3.3 |
| 33632 | -51.3 | -75.1  | SST | 201 | 72 | 100 | 0.8 | 9.1  | 9.1 |

|       |      |        |     |     |   |     |     |      |     |
|-------|------|--------|-----|-----|---|-----|-----|------|-----|
| 41912 | 32.6 | -70.8  | SST | 768 | 0 | 100 | 0.4 | -3.8 | 3.8 |
| 41969 | 26.4 | -74.4  | SST | 627 | 0 | 100 | 0.3 | -4.1 | 4.1 |
| 43575 | 20.6 | -105.6 | SST | 251 | 0 | 100 | 1.0 | -6.3 | 6.3 |
| 43578 | 19.4 | -107.0 | SST | 270 | 0 | 100 | 0.3 | -4.6 | 4.6 |
| 44505 | 41.0 | -45.3  | SST | 253 | 0 | 100 | 0.8 | -5.6 | 5.6 |

|       |       |        |     |     |   |     |     |      |     |
|-------|-------|--------|-----|-----|---|-----|-----|------|-----|
| 51743 | -5.7  | 169.1  | SST | 640 | 0 | 100 | 0.3 | -4.2 | 4.2 |
| 51747 | 11.8  | -128.9 | SST | 601 | 0 | 100 | 0.2 | -4.0 | 4.0 |
| 51748 | -10.4 | 179.5  | SST | 644 | 0 | 100 | 0.3 | -4.3 | 4.3 |
| 51751 | 11.4  | -126.8 | SST | 575 | 0 | 100 | 0.1 | -3.9 | 3.9 |

|       |       |        |     |     |   |     |     |      |     |
|-------|-------|--------|-----|-----|---|-----|-----|------|-----|
| 51752 | -10.8 | -170.5 | SST | 605 | 0 | 100 | 0.4 | -4.2 | 4.2 |
| 51980 | -2.9  | 151.4  | SST | 109 | 0 | 71  | 2.8 | -3.4 | 4.4 |
| 53521 | 5.3   | 131.1  | SST | 272 | 0 | 99  | 0.2 | -3.8 | 3.8 |
| 53522 | 4.6   | 131.6  | SST | 285 | 0 | 99  | 0.3 | -3.8 | 3.8 |
| 53566 | 5.1   | 129.3  | SST | 314 | 0 | 99  | 0.3 | -3.8 | 3.8 |
| 53567 | 5.7   | 130.7  | SST | 245 | 0 | 100 | 0.2 | -3.8 | 3.8 |
| 53568 | 5.3   | 131.1  | SST | 250 | 0 | 100 | 0.2 | -3.8 | 3.8 |
| 53571 | 3.8   | 127.1  | SST | 160 | 0 | 97  | 1.5 | -4.7 | 4.9 |
| 53578 | 5.2   | 131.0  | SST | 264 | 0 | 100 | 0.3 | -3.9 | 4.0 |
| 53580 | 4.0   | 131.8  | SST | 281 | 0 | 99  | 0.4 | -3.9 | 3.9 |
| 53582 | 4.4   | 130.9  | SST | 308 | 0 | 98  | 0.3 | -3.8 | 3.8 |
| 53591 | 4.3   | 130.9  | SST | 314 | 0 | 98  | 0.4 | -3.8 | 3.8 |
| 53592 | 4.1   | 130.3  | SST | 289 | 0 | 98  | 0.4 | -3.8 | 3.8 |
| 53593 | 4.4   | 130.9  | SST | 313 | 0 | 98  | 0.4 | -3.9 | 3.9 |
| 53594 | 4.1   | 130.9  | SST | 312 | 0 | 97  | 0.4 | -3.9 | 3.9 |
| 53595 | 4.3   | 131.2  | SST | 291 | 0 | 99  | 0.3 | -3.8 | 3.8 |
| 53596 | 3.4   | 128.7  | SST | 292 | 0 | 99  | 0.4 | -3.8 | 3.9 |
| 53599 | 4.2   | 131.0  | SST | 292 | 0 | 98  | 0.4 | -3.9 | 3.9 |
| 53600 | 4.2   | 130.9  | SST | 279 | 0 | 96  | 0.4 | -3.8 | 3.8 |
| 53601 | 4.1   | 131.2  | SST | 282 | 0 | 99  | 0.4 | -3.9 | 3.9 |
| 53602 | 5.4   | 129.9  | SST | 266 | 0 | 98  | 0.4 | -3.7 | 3.8 |
| 53603 | 4.0   | 126.6  | SST | 104 | 0 | 94  | 1.4 | -4.9 | 5.1 |
| 53604 | 4.4   | 130.6  | SST | 313 | 0 | 98  | 0.4 | -3.9 | 3.9 |
| 53605 | 5.3   | 130.2  | SST | 270 | 0 | 97  | 0.4 | -3.7 | 3.7 |
| 53606 | 4.4   | 130.5  | SST | 250 | 0 | 97  | 0.4 | -3.8 | 3.8 |
| 53607 | 4.7   | 132.1  | SST | 226 | 0 | 100 | 0.3 | -3.8 | 3.8 |
| 53608 | 2.1   | 132.2  | SST | 254 | 0 | 79  | 3.2 | -3.9 | 5.0 |
| 53609 | 4.7   | 132.2  | SST | 265 | 0 | 100 | 0.3 | -3.9 | 3.9 |
| 53901 | 3.9   | 127.0  | SST | 212 | 0 | 97  | 1.5 | -4.5 | 4.8 |
| 53902 | 5.0   | 131.7  | SST | 289 | 0 | 100 | 0.2 | -3.9 | 3.9 |
| 53903 | 20.4  | 125.1  | SST | 233 | 0 | 100 | 0.3 | -4.1 | 4.1 |
| 53904 | 20.2  | 125.6  | SST | 186 | 1 | 100 | 0.1 | -4.1 | 4.1 |







**TABLE 3**  
**MONITORING OF LAND SURFACE OBSERVATIONS**  
**MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS**  
**MONITORING CENTRE: EXETER**  
**MONTH: Nov 2005**

**Monitoring procedures**

|                               |          |                                                                                                                                                                                                                                     |
|-------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Period</b>                 |          | :One calendar month.                                                                                                                                                                                                                |
| <b>Data monitored</b>         |          | :Reports from each unique identifier for synops & autosynops.                                                                                                                                                                       |
| <b>Standard of comparison</b> |          | :Background field from UKMO global model.                                                                                                                                                                                           |
| <b>Observation times</b>      |          | :00, 06, 12, 18 UTC                                                                                                                                                                                                                 |
| <b>Elements monitored</b>     |          | :Surface pressure (hPa).                                                                                                                                                                                                            |
| <b>Parameters monitored</b>   | :HT(m)   | :Station height (in metres) as given in WMO No. 9 Vol A                                                                                                                                                                             |
|                               | :RP      | :Pressure reporting practice<br>M=mean sea level pressure (hPa) reported.<br>S=Station level pressure reported.<br>8=Geopotential height (m) of 850 hPa surface reported.<br>7=Geopotential height (m) of 700 hPa surface reported. |
|                               | :NOBS    | :Number of observations received excluding duplicates.                                                                                                                                                                              |
|                               | :NGE     | :Number of observations with gross errors.                                                                                                                                                                                          |
|                               | :PGE     | :Percentage of observations with gross errors.                                                                                                                                                                                      |
|                               | :%REJ    | :Percentage of observations flagged excluding those with gross errors.                                                                                                                                                              |
|                               | :SD      | :SD of difference of observations from background values excluding those with gross errors.                                                                                                                                         |
|                               | :BIAS    | :Mean difference of observations from background values excluding those with gross errors.                                                                                                                                          |
|                               | :RMS     | :Root Mean Square difference of observations from background values excluding those with gross errors.                                                                                                                              |
| <b>GROSS ERROR LIMIT</b>      | :15 hPa  | (pressure)                                                                                                                                                                                                                          |
| <b>SELECTION CRITERIA</b>     | :NOBS    | ≥ 20 ,and one or more of the following:                                                                                                                                                                                             |
|                               | 1.  bias | ≥ 4 hPa                                                                                                                                                                                                                             |
|                               | 2. SD    | ≥ 6 hPa                                                                                                                                                                                                                             |
|                               | 3. PGE   | ≥ 25.                                                                                                                                                                                                                               |

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.  
For stn ht < 500m, mslp is that as reported by the station where available.

## SUSPECT SYNOPS (PRESSURE) BY WMO REGION NOV 200

## WMO REGION 1:

| STATION | LAT   | LONG  | HT (M) | RP | NOBS | NGE | PGE | %REJ | SD  | BIAS  | RMS  |
|---------|-------|-------|--------|----|------|-----|-----|------|-----|-------|------|
| 60320   | 35.9N | 5.4W  | 2      | MS | 54   | 0   | 0   | 2    | 1.1 | -9.4  | 9.5  |
| 60423   | 36.3N | 8.0E  | 680    | S8 | 86   | 85  | 99  | 0    | 0.0 | 7.0   | 7.0  |
| 61492   | 16.1N | 13.5W | 18     | MS | 63   | 0   | 0   | 2    | 1.8 | 4.4   | 4.8  |
| 62056   | 32.8N | 21.9E | 625    | S8 | 48   | 0   | 0   | 2    | 1.1 | -5.4  | 5.5  |
| 63160   | 10.4N | 45.0E | 9      | M  | 25   | 0   | 0   | 0    | 1.0 | -4.2  | 4.3  |
| 63450   | 9.0N  | 38.8E | 2354   | MS | 76   | 0   | 0   | 0    | 0.5 | 4.7   | 4.7  |
| 63671   | 1.8N  | 40.1E | 244    | M  | 109  | 1   | 1   | 2    | 2.2 | -4.9  | 5.4  |
| 63801   | 4.9S  | 29.6E | 882    | S8 | 63   | 0   | 0   | 2    | 1.2 | 8.6   | 8.7  |
| 63881   | 8.0S  | 31.6E | 1923   | S  | 52   | 10  | 19  | 0    | 1.0 | 13.4  | 13.4 |
| 68014   | 19.6S | 18.1E | 1411   | S8 | 82   | 0   | 0   | 0    | 0.8 | -7.2  | 7.2  |
| 68030   | 18.5S | 25.6E | 1071   | S8 | 77   | 3   | 4   | 0    | 4.1 | 10.4  | 11.2 |
| 68038   | 20.5S | 26.0E | 903    | 8  | 65   | 0   | 0   | 0    | 0.8 | 4.1   | 4.2  |
| 68102   | 19.9S | 16.4E | 1343   | S8 | 114  | 0   | 0   | 0    | 0.9 | 5.9   | 6.0  |
| 68300   | 26.6S | 15.1E | 16     | MS | 114  | 10  | 9   | 0    | 0.9 | -13.3 | 13.3 |
| 68312   | 26.5S | 18.1E | 1067   | S8 | 80   | 0   | 0   | 0    | 0.9 | 4.5   | 4.6  |
| 68396   | 26.5S | 31.3E | 641    | S8 | 57   | 0   | 0   | 4    | 1.9 | 5.2   | 5.5  |
| 68575   | 30.0S | 30.0E | 1175   | S8 | 111  | 111 | 100 | 0    |     |       |      |

## WMO REGION 2:

| STATION | LAT   | LONG   | HT (M) | RP | NOBS | NGE | PGE | %REJ | SD  | BIAS  | RMS  |
|---------|-------|--------|--------|----|------|-----|-----|------|-----|-------|------|
| 25248   | 67.3N | 168.0E | 353    | MS | 50   | 1   | 2   | 68   | 3.3 | 7.0   | 7.7  |
| 28666   | 55.3N | 67.3E  | 140    | MS | 115  | 0   | 0   | 46   | 1.9 | -4.2  | 4.6  |
| 30554   | 54.5N | 113.6E | 995    | MS | 115  | 0   | 0   | 0    | 0.7 | 11.9  | 11.9 |
| 31534   | 50.4N | 131.0E | 230    | MS | 111  | 2   | 2   | 5    | 2.2 | -4.6  | 5.1  |
| 36982   | 41.9N | 78.2E  | 3635   | S7 | 91   | 1   | 1   | 3    | 1.4 | 5.2   | 5.4  |
| 38846   | 38.4N | 70.0E  | 1437   | S8 | 65   | 0   | 0   | 8    | 3.3 | -5.5  | 6.4  |
| 40435   | 27.0N | 44.1E  | 991    | MS | 56   | 1   | 2   | 0    | 1.3 | 6.2   | 6.3  |
| 40700   | 39.6N | 47.9E  | 45     | MS | 108  | 1   | 1   | 1    | 0.7 | -5.6  | 5.6  |
| 40713   | 37.4N | 46.3E  | 1475   | MS | 112  | 27  | 24  | 0    | 0.7 | 13.7  | 13.7 |
| 40741   | 36.5N | 61.2E  | 235    | MS | 114  | 0   | 0   | 0    | 0.9 | -5.2  | 5.3  |
| 40743   | 36.2N | 57.7E  | 978    | MS | 113  | 0   | 0   | 0    | 0.6 | 5.9   | 5.9  |
| 40757   | 35.6N | 53.4E  | 1171   | MS | 113  | 1   | 1   | 2    | 1.3 | 5.0   | 5.2  |
| 40780   | 33.6N | 46.4E  | 1362   | MS | 114  | 2   | 2   | 1    | 1.1 | 4.5   | 4.6  |
| 40854   | 29.1N | 58.4E  | 1067   | MS | 80   | 0   | 0   | 1    | 1.0 | 11.5  | 11.5 |
| 41252   | 23.4N | 56.5E  | 244    | MS | 93   | 0   | 0   | 0    | 0.8 | -9.3  | 9.3  |
| 41254   | 23.1N | 57.6E  | 1755   | S8 | 115  | 115 | 100 | 0    |     |       |      |
| 41396   | 16.0N | 48.9E  | 700    | MS | 55   | 0   | 0   | 0    | 0.9 | 6.2   | 6.3  |
| 41466   | 13.7N | 44.1E  | 1402   | S8 | 68   | 0   | 0   | 0    | 0.7 | -8.5  | 8.5  |
| 44416   | 28.6N | 81.6E  | 720    | MS | 59   | 0   | 0   | 0    | 1.0 | 4.1   | 4.2  |
| 47022   | 40.8N | 128.2E | 1224   | S  | 71   | 1   | 1   | 1    | 0.9 | 5.1   | 5.2  |
| 47678   | 33.1N | 139.8E | 79     | MS | 115  | 0   | 0   | 0    | 0.7 | -9.1  | 9.1  |
| 48921   | 21.6N | 101.9E | 923    | S  | 34   | 34  | 100 | 0    |     |       |      |
| 48924   | 21.1N | 101.5E | 644    | S  | 50   | 0   | 0   | 0    | 0.8 | 11.3  | 11.3 |
| 48925   | 20.7N | 102.0E | 550    | S  | 48   | 0   | 0   | 0    | 0.8 | -10.1 | 10.1 |
| 48938   | 19.2N | 101.7E | 326    | MS | 48   | 37  | 77  | 0    | 0.4 | 14.5  | 14.5 |
| 50978   | 45.3N | 130.9E | 234    | MS | 115  | 0   | 0   | 0    | 0.7 | -6.4  | 6.4  |
| 52866   | 36.6N | 101.8E | 2262   | S  | 115  | 0   | 0   | 0    | 1.0 | -4.8  | 4.9  |
| 53646   | 38.3N | 109.8E | 1058   | MS | 115  | 0   | 0   | 0    | 0.5 | -12.7 | 12.7 |
| 56462   | 29.0N | 101.5E | 2994   | S  | 115  | 0   | 0   | 0    | 1.4 | 9.0   | 9.1  |
| 56768   | 25.0N | 101.5E | 1773   | S  | 114  | 0   | 0   | 0    | 0.6 | -5.2  | 5.2  |
| 57816   | 26.6N | 106.7E | 1074   | MS | 115  | 109 | 95  | 0    | 0.3 | -14.6 | 14.6 |
| 59663   | 21.8N | 112.0E | 22     | MS | 115  | 0   | 0   | 0    | 1.0 | -8.1  | 8.2  |



## WMO REGION 3:

| STATION | LAT   | LONG  | HT(M) | RP | NOBS | NGE | PGE | %REJ | SD  | BIAS  | RMS  |
|---------|-------|-------|-------|----|------|-----|-----|------|-----|-------|------|
| 80099   | 7.1N  | 70.7W | 122   | MS | 32   | 0   | 0   | 0    | 1.2 | -5.6  | 5.7  |
| 80426   | 9.4N  | 70.6W | 582   | MS | 24   | 0   | 0   | 38   | 0.6 | 4.5   | 4.5  |
| 82181   | 2.0S  | 54.1W | 146   | MS | 85   | 0   | 0   | 0    | 0.8 | 5.7   | 5.8  |
| 82704   | 7.6S  | 72.7W | 170   | MS | 86   | 0   | 0   | 0    | 1.2 | -4.1  | 4.3  |
| 82765   | 7.3S  | 47.5W | 193   | MS | 86   | 0   | 0   | 0    | 0.8 | 4.2   | 4.3  |
| 83235   | 12.4S | 46.4W | 604   | MS | 82   | 1   | 1   | 1    | 1.4 | 6.4   | 6.6  |
| 83332   | 14.1S | 46.4W | 826   | MS | 82   | 17  | 21  | 0    | 0.6 | 14.0  | 14.0 |
| 83470   | 17.9S | 50.9W | 727   | MS | 79   | 0   | 0   | 0    | 0.9 | -5.7  | 5.8  |
| 83531   | 18.6S | 46.5W | 940   | MS | 78   | 0   | 0   | 0    | 0.7 | -6.2  | 6.2  |
| 83676   | 21.1S | 49.0W | 536   | MS | 82   | 0   | 0   | 1    | 1.0 | -4.4  | 4.5  |
| 83836   | 25.5S | 50.6W | 837   | MS | 86   | 0   | 0   | 1    | 0.9 | -4.4  | 4.5  |
| 84132   | 0.9S  | 75.4W | 215   | MS | 53   | 0   | 0   | 4    | 1.1 | 4.3   | 4.4  |
| 84140   | 1.1S  | 79.5W | 73    | MS | 53   | 0   | 0   | 40   | 0.9 | 7.4   | 7.5  |
| 84143   | 1.0S  | 78.6W | 2628  | S7 | 52   | 0   | 0   | 33   | 1.3 | -4.8  | 5.0  |
| 84160   | 1.3S  | 78.6W | 2940  | S7 | 54   | 0   | 0   | 43   | 1.2 | 12.0  | 12.1 |
| 84452   | 6.8S  | 79.8W | 29    | MS | 105  | 0   | 0   | 0    | 0.6 | 6.0   | 6.0  |
| 84455   | 6.5S  | 76.4W | 281   | MS | 79   | 0   | 0   | 0    | 1.5 | 6.1   | 6.3  |
| 84472   | 7.1S  | 78.5W | 2620  | S  | 50   | 0   | 0   | 0    | 0.8 | -5.6  | 5.7  |
| 84474   | 7.2S  | 76.7W | 350   | S  | 20   | 8   | 40  | 60   | 7.0 | 7.6   | 10.3 |
| 84501   | 8.1S  | 79.0W | 26    | MS | 80   | 0   | 0   | 0    | 0.6 | 4.7   | 4.7  |
| 84686   | 13.6S | 72.0W | 3248  | S  | 102  | 0   | 0   | 0    | 1.0 | -4.3  | 4.4  |
| 84688   | 13.7S | 73.4W | 3444  | S  | 42   | 0   | 0   | 0    | 0.6 | -12.4 | 12.4 |
| 84720   | 14.9S | 75.0W | 567   | MS | 53   | 0   | 0   | 0    | 0.8 | 4.2   | 4.3  |
| 84782   | 18.1S | 70.3W | 468   | MS | 78   | 0   | 0   | 0    | 1.2 | 5.2   | 5.3  |
| 85140   | 14.3S | 67.4W | 140   | MS | 57   | 0   | 0   | 2    | 1.4 | 8.8   | 8.9  |
| 85264   | 18.5S | 64.1W | 1998  | S  | 55   | 55  | 100 | 0    |     |       |      |
| 85312   | 19.8S | 63.9W | 992   | S  | 46   | 1   | 2   | 28   | 1.9 | -11.6 | 11.8 |
| 85406   | 18.5S | 70.2W | 55    | M  | 111  | 0   | 0   | 0    | 1.1 | 6.0   | 6.1  |
| 85432   | 22.5S | 68.9W | 2320  | S8 | 81   | 0   | 0   | 0    | 0.6 | 4.2   | 4.2  |

## WMO REGION 4:

| STATION | LAT   | LONG   | HT(M) | RP | NOBS | NGE | PGE | %REJ | SD  | BIAS | RMS |
|---------|-------|--------|-------|----|------|-----|-----|------|-----|------|-----|
| 71060   | 52.5N | 116.1W | 230   | MS | 115  | 115 | 100 | 0    |     |      |     |
| 71181   | 47.1N | 55.3W  | 29    | MS | 115  | 0   | 0   | 0    | 0.7 | -5.8 | 5.8 |
| 71506   | 67.0N | 136.2W | 720   | MS | 111  | 0   | 0   | 26   | 2.3 | -4.8 | 5.3 |
| 71581   | 54.5N | 128.6W | 215   | MS | 109  | 71  | 65  | 0    | 4.8 | -8.4 | 9.7 |
| 71979   | 53.8N | 118.4W | 1542  | MS | 79   | 0   | 0   | 0    | 1.1 | 9.2  | 9.3 |
| 76055   | 31.0N | 114.9W | 440   | MS | 63   | 63  | 100 | 0    |     |      |     |
| 76160   | 29.1N | 110.9W | 212   | MS | 21   | 0   | 0   | 0    | 0.5 | -4.4 | 4.4 |
| 76225   | 28.6N | 106.1W | 1435  | MS | 75   | 0   | 0   | 1    | 0.9 | -4.3 | 4.4 |
| 76382   | 25.5N | 103.5W | 1124  | MS | 82   | 0   | 0   | 1    | 1.0 | 4.1  | 4.2 |
| 76543   | 22.0N | 98.8W  | 104   | MS | 33   | 0   | 0   | 3    | 1.1 | 9.1  | 9.2 |
| 76658   | 19.2N | 103.7W | 494   | MS | 25   | 0   | 0   | 0    | 0.6 | 5.0  | 5.0 |
| 76762   | 17.5N | 99.5W  | 1265  | MS | 95   | 0   | 0   | 0    | 0.8 | 5.5  | 5.6 |
| 76843   | 16.8N | 93.1W  | 528   | MS | 110  | 0   | 0   | 1    | 1.1 | -4.3 | 4.4 |
| 78482   | 18.2N | 71.1W  | 3     | M  | 50   | 0   | 0   | 0    | 0.9 | 5.4  | 5.5 |
| 78588   | 17.2N | 87.5W  | -292  | M  | 115  | 115 | 100 | 0    |     |      |     |
| 78655   | 14.0N | 89.6W  | 660   | MS | 50   | 0   | 0   | 2    | 1.1 | 4.2  | 4.3 |

## WMO REGION 5:

| STATION | LAT   | LONG   | HT(M) | RP | NOBS | NGE | PGE | %REJ | SD  | BIAS  | RMS  |
|---------|-------|--------|-------|----|------|-----|-----|------|-----|-------|------|
| 91258   | 11.2N | 169.9E | 2     | MS | 34   | 0   | 0   | 85   | 1.1 | 5.9   | 6.0  |
| 92010   | 6.1S  | 145.4E | 1587  | M  | 27   | 1   | 4   | 0    | 1.2 | 10.3  | 10.4 |
| 94130   | 14.8S | 131.9E | 120   | MS | 106  | 0   | 0   | 0    | 1.2 | 5.2   | 5.3  |
| 96505   | 3.7N  | 115.7E | -9999 | 8  | 51   | 50  | 98  | 0    | 0.0 | 0.2   | 0.2  |
| 97284   | 8.6S  | 120.5E | 1170  | S8 | 78   | 0   | 0   | 3    | 1.1 | 4.9   | 5.0  |
| 97378   | 10.7S | 123.1E | 1     | MS | 36   | 33  | 92  | 0    | 0.2 | -14.7 | 14.7 |

## WMO REGION 6:

| STATION | LAT   | LONG  | HT(M) | RP | NOBS | NGE | PGE | %REJ | SD  | BIAS  | RMS  |
|---------|-------|-------|-------|----|------|-----|-----|------|-----|-------|------|
| 01360   | 61.9N | 7.9E  | 711   | MS | 108  | 0   | 0   | 1    | 1.1 | 6.2   | 6.3  |
| 04416   | 72.6N | 38.4W | 3202  | S  | 103  | 0   | 0   | 0    | 0.9 | 4.2   | 4.3  |
| 06239   | 54.9N | 44.7E | 49    | MS | 345  | 160 | 46  | 0    | 8.6 | -3.0  | 9.1  |
| 06605   | 47.1N | 7.1E  | 1599  | S8 | 116  | 0   | 0   | 2    | 1.3 | -4.6  | 4.8  |
| 08912   | 42.9N | 0.8W  | 1434  | MS | 22   | 22  | 100 | 0    |     |       |      |
| 10850   | 48.8N | 10.7E | 457   | MS | 343  | 0   | 0   | 0    | 0.5 | -6.0  | 6.0  |
| 11116   | 47.5N | 10.8E | 870   | MS | 58   | 1   | 2   | 2    | 0.9 | 4.7   | 4.8  |
| 13269   | 44.3N | 19.9E | 176   | MS | 115  | 0   | 0   | 0    | 0.7 | 7.9   | 7.9  |
| 14554   | 44.9N | 18.4E | 136   | S  | 58   | 8   | 14  | 2    | 0.6 | -13.8 | 13.8 |
| 17521   | 35.2N | 33.5E | 285   | MS | 91   | 91  | 100 | 0    |     |       |      |

## ANTARCTIC:

| STATION | LAT   | LONG   | HT(M) | RP | NOBS | NGE | PGE | %REJ | SD  | BIAS | RMS |
|---------|-------|--------|-------|----|------|-----|-----|------|-----|------|-----|
| 89004   | 71.7S | 2.8W   | 815   | MS | 99   | 0   | 0   | 0    | 1.1 | -7.0 | 7.1 |
| 89257   | 75.4S | 59.9W  | 40    | S  | 671  | 0   | 0   | 0    | 2.6 | -6.1 | 6.6 |
| 89266   | 72.2S | 60.2W  | 91    | S  | 299  | 291 | 97  | 0    | 7.6 | 4.3  | 8.7 |
| 89272   | 74.8S | 70.5W  | 1395  | S  | 179  | 179 | 100 | 0    |     |      |     |
| 89512   | 70.8S | 11.8E  | 140   | MS | 115  | 0   | 0   | 0    | 1.0 | -4.3 | 4.4 |
| 89610   | 65.9S | 113.1E | 90    | S  | 310  | 0   | 0   | 0    | 1.1 | -9.4 | 9.5 |
| 89614   | 66.7S | 111.5E | 500   | S  | 316  | 316 | 100 | 0    |     |      |     |
| 89769   | 78.5S | 168.4E | 50    | S  | 701  | 0   | 0   | 0    | 1.7 | -4.4 | 4.7 |
| 89811   | 66.7S | 112.8E | 1366  | S  | 307  | 0   | 0   | 0    | 1.1 | -5.6 | 5.7 |
| 89868   | 79.9S | 170.0E | 60    | S  | 309  | 0   | 0   | 0    | 1.4 | -4.7 | 4.9 |





TABLE 4A

**MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS**  
**MONITORING CENTRE: EXETER**  
**MONTH: Nov 2005**

**Monitoring procedures**

**Period** :One calendar month.

**Data monitored** :Statistics for each airline carrier.

**Area monitored** :90°N - 90°S, 180°W - 180°E.

**Standard of comparison** :Background field from UKMO global model.

**Observation times** :All hours combined.

**Level(s) monitored** :300.0 - 150.0 hPa

**Elements monitored** :TEMP in °C ; WIND in m s<sup>-1</sup>

**Parameters monitored**

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

**GROSS ERROR LIMITS** :10.0 °C ; 60 m s<sup>-1</sup> Vector Wind

**SELECTION CRITERIA** :N REP ≥ 20

**NB:** All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

| IDENT. | N.REP. | TEMPERATURE |     |     |      | N.REP. | WIND |     |    |      |      |
|--------|--------|-------------|-----|-----|------|--------|------|-----|----|------|------|
|        |        | PG          | PR  | RMS | BIAS |        | PG   | PR  | PC | RMS  | BIAS |
| AAH    | 2290   | 0           | 45  | 1.3 | 0.3  | 2269   | 0    | 45  | 0  | 5.8  | 0.5  |
| AAL    | 8267   | 0           | 23  | 1.4 | 0.1  | 7872   | 0    | 24  | 0  | 5.8  | 0.4  |
| AAR    | 691    | 1           | 5   | 1.7 | -0.5 | 671    | 0    | 6   | 0  | 8.3  | -0.5 |
| ACA    | 3015   | 0           | 8   | 1.3 | 0.0  | 2528   | 0    | 9   | 0  | 6.8  | 0.5  |
| ACF    | 53     | 11          | 45  | 3.7 | -0.6 | 24     | 0    | 46  | 0  | 21.7 | 2.8  |
| ACI    | 122    | 0           | 25  | 1.0 | 0.3  | 118    | 0    | 25  | 0  | 6.4  | 0.4  |
| AEA    | 1225   | 0           | 2   | 1.5 | 0.3  | 1050   | 0    | 5   | 0  | 8.2  | 0.3  |
| AFL    | 468    | 0           | 6   | 1.7 | 0.3  | 282    | 1    | 8   | 0  | 10.0 | 0.6  |
| AFR    | 4328   | 0           | 4   | 1.4 | 0.2  | 4201   | 0    | 4   | 0  | 6.4  | 0.7  |
| AFZ    | 24022  | 0           | 11  | 1.6 | 1.1  | 24022  | 0    | 21  | 0  | 5.7  | 0.8  |
| AJM    | 267    | 1           | 13  | 2.0 | -0.2 | 218    | 0    | 60  | 0  | 12.0 | 0.8  |
| AJX    | 284    | 0           | 6   | 1.6 | 0.6  | 286    | 1    | 8   | 0  | 10.8 | 0.1  |
| AMT    | 1818   | 0           | 42  | 1.2 | 0.0  | 1785   | 0    | 42  | 0  | 6.0  | 0.2  |
| AMX    | 538    | 1           | 6   | 2.0 | 0.3  | 468    | 0    | 6   | 0  | 10.4 | 0.2  |
| ANA    | 36     | 3           | 6   | 1.3 | 0.0  | 35     | 0    | 14  | 0  | 13.4 | -1.8 |
| ANZ    | 5848   | 0           | 30  | 1.4 | 0.2  | 5808   | 0    | 30  | 0  | 6.5  | 0.3  |
| ATN    | 94     | 3           | 100 | 3.9 | -1.7 | 72     | 0    | 18  | 0  | 10.6 | 1.9  |
| AUA    | 422    | 0           | 2   | 1.3 | 0.4  | 410    | 0    | 2   | 0  | 4.7  | 0.5  |
| AVA    | 415    | 0           | 3   | 1.5 | 0.4  | 412    | 0    | 6   | 0  | 9.9  | 0.3  |
| AVN    | 145    | 0           | 47  | 1.0 | -0.1 | 143    | 0    | 48  | 0  | 5.5  | 0.1  |
| AXF    | 100    | 0           | 43  | 1.2 | 0.5  | 95     | 0    | 45  | 0  | 8.9  | 0.4  |
| AZA    | 468    | 2           | 21  | 3.5 | 1.9  | 387    | 1    | 7   | 0  | 9.7  | 1.0  |
| BAL    | 417    | 1           | 6   | 1.2 | 0.1  | 400    | 0    | 9   | 0  | 8.4  | 0.2  |
| BAW    | 730    | 1           | 14  | 1.7 | -0.3 | 486    | 0    | 13  | 0  | 8.3  | 0.9  |
| BBR    | 86     | 1           | 1   | 1.2 | 0.2  | 85     | 0    | 2   | 0  | 9.7  | 0.9  |
| BHP    | 46     | 0           | 0   | 1.4 | 0.4  | 48     | 0    | 2   | 0  | 10.9 | -0.9 |
| BMA    | 330    | 0           | 4   | 1.2 | -0.1 | 317    | 0    | 4   | 0  | 4.6  | 0.9  |
| BPA    | 350    | 2           | 100 | 3.2 | 1.8  | 331    | 1    | 14  | 0  | 11.3 | -0.6 |
| BSK    | 32     | 0           | 38  | 1.2 | 0.0  | 34     | 0    | 38  | 0  | 5.5  | 0.8  |
| BWA    | 382    | 2           | 4   | 1.4 | -0.2 | 313    | 1    | 4   | 0  | 7.5  | 1.1  |
| CAL    | 51     | 0           | 8   | 2.0 | 0.2  | 54     | 0    | 15  | 0  | 13.8 | -1.9 |
| CCA    | 362    | 2           | 19  | 2.5 | 0.3  | 344    | 1    | 100 | 0  | 13.3 | -0.6 |
| CES    | 293    | 1           | 9   | 2.0 | 0.1  | 292    | 1    | 10  | 0  | 9.6  | 0.3  |
| CFC    | 35     | 0           | 0   | 1.2 | 0.0  | 38     | 0    | 5   | 0  | 10.2 | 2.2  |
| CFG    | 1114   | 1           | 6   | 1.5 | 0.3  | 930    | 0    | 8   | 0  | 9.1  | 0.0  |
| CFY    | 29     | 0           | 0   | 1.1 | -0.4 | 27     | 0    | 0   | 0  | 3.9  | 0.3  |
| CGF    | 101    | 0           | 7   | 1.1 | -0.3 | 97     | 0    | 7   | 0  | 4.0  | 1.1  |
| CGH    | 167    | 0           | 2   | 1.3 | -0.3 | 159    | 0    | 2   | 0  | 4.4  | 0.6  |
| CKK    | 147    | 1           | 9   | 2.0 | 0.3  | 148    | 3    | 11  | 0  | 10.0 | 0.1  |
| CKS    | 394    | 1           | 33  | 1.7 | 0.3  | 337    | 0    | 39  | 0  | 9.2  | -0.6 |
| CLX    | 294    | 1           | 4   | 1.6 | -0.6 | 153    | 0    | 6   | 0  | 9.4  | -0.2 |
| CNJ    | 35324  | 0           | 72  | 1.2 | 0.5  | 35324  | 0    | 72  | 0  | 4.6  | 0.5  |
| COA    | 4783   | 0           | 7   | 1.5 | 0.3  | 4640   | 0    | 6   | 0  | 5.0  | 0.6  |
| CRL    | 86     | 0           | 5   | 1.7 | 0.3  | 86     | 0    | 7   | 0  | 8.3  | 0.2  |
| CSD    | 66     | 3           | 9   | 2.3 | 0.8  | 33     | 0    | 3   | 0  | 5.1  | -0.4 |
| CSN    | 96     | 0           | 5   | 1.5 | 0.1  | 96     | 0    | 9   | 0  | 10.7 | 0.9  |
| CUB    | 300    | 0           | 5   | 2.0 | -0.2 | 256    | 0    | 15  | 0  | 12.7 | 0.5  |
| DAB    | 853    | 0           | 5   | 1.3 | -0.2 | 822    | 0    | 5   | 0  | 4.3  | 0.5  |
| DAI    | 699    | 0           | 6   | 1.2 | 0.1  | 671    | 0    | 6   | 0  | 4.2  | 0.9  |
| DAL    | 3571   | 0           | 32  | 1.4 | 0.4  | 3489   | 0    | 32  | 0  | 5.4  | 0.2  |
| DLH    | 3562   | 0           | 7   | 1.2 | 0.1  | 3453   | 0    | 7   | 0  | 4.9  | 0.6  |
| DRD    | 431    | 1           | 3   | 1.7 | 0.0  | 428    | 0    | 2   | 0  | 6.9  | 0.8  |
| EDW    | 71     | 3           | 11  | 1.2 | -0.2 | 59     | 0    | 14  | 0  | 10.2 | 0.5  |
| EEZ    | 99     | 0           | 11  | 1.8 | 0.1  | 95     | 0    | 8   | 0  | 8.3  | 1.1  |
| EIA    | 231    | 1           | 25  | 3.0 | 0.6  | 217    | 0    | 100 | 0  | 14.5 | 1.4  |
| ELY    | 416    | 0           | 1   | 1.3 | 0.3  | 383    | 1    | 2   | 0  | 5.3  | 0.5  |
| ESS    | 156    | 1           | 17  | 3.1 | 1.6  | 46     | 0    | 4   | 0  | 7.5  | 0.3  |
| EVA    | 239    | 0           | 6   | 1.5 | 0.4  | 245    | 0    | 7   | 0  | 7.4  | 0.2  |
| FCA    | 160    | 0           | 100 | 3.7 | 2.5  | 124    | 0    | 3   | 0  | 8.1  | 0.8  |

| IDENT. | N.REP. | TEMPERATURE |    |     |      | BIAS | N.REP. | WIND |     |     |      | BIAS |
|--------|--------|-------------|----|-----|------|------|--------|------|-----|-----|------|------|
|        |        | PG          | PR | RMS | PG   |      |        | PR   | PC  | RMS |      |      |
| FDX    | 1583   | 1           | 48 | 1.3 | 0.3  |      | 1371   | 0    | 49  | 0   | 7.0  | 0.2  |
| FGI    | 181    | 0           | 2  | 1.1 | -0.4 |      | 176    | 0    | 2   | 0   | 4.7  | 0.4  |
| FGL    | 130    | 0           | 5  | 1.3 | 0.2  |      | 125    | 0    | 6   | 0   | 4.2  | 1.0  |
| FGN    | 38     | 0           | 8  | 1.6 | 0.4  |      | 37     | 0    | 3   | 0   | 3.7  | 1.1  |
| FGS    | 493    | 0           | 3  | 1.3 | 0.3  |      | 478    | 0    | 3   | 0   | 4.1  | 0.9  |
| FGZ    | 50     | 0           | 6  | 1.1 | -0.3 |      | 49     | 0    | 6   | 0   | 4.0  | 0.0  |
| FIF    | 31     | 10          | 16 | 1.7 | 0.2  |      | 22     | 0    | 5   | 0   | 6.4  | 0.5  |
| FIN    | 245    | 0           | 4  | 1.6 | -0.1 |      | 182    | 1    | 6   | 0   | 9.3  | 0.5  |
| FJI    | 804    | 4           | 40 | 2.0 | 0.7  |      | 792    | 0    | 31  | 0   | 7.3  | 0.3  |
| FNJ    | 20     | 0           | 0  | 1.2 | -0.1 |      | 22     | 0    | 0   | 0   | 5.3  | 1.0  |
| FOM    | 659    | 1           | 26 | 1.3 | -0.1 |      | 653    | 0    | 27  | 0   | 7.1  | 0.6  |
| FWI    | 420    | 2           | 7  | 1.6 | -0.2 |      | 412    | 0    | 6   | 0   | 8.5  | 0.8  |
| GCO    | 66     | 0           | 5  | 1.5 | -0.4 |      | 58     | 0    | 100 | 0   | 12.5 | 0.5  |
| GEC    | 434    | 1           | 23 | 1.5 | 0.1  |      | 405    | 0    | 25  | 0   | 8.8  | 1.0  |
| GES    | 46     | 0           | 7  | 2.1 | -1.3 |      | 31     | 0    | 6   | 0   | 6.9  | 2.0  |
| GOJ    | 37     | 0           | 0  | 1.0 | 0.0  |      | 36     | 0    | 0   | 0   | 5.0  | 1.9  |
| GRL    | 91     | 0           | 1  | 1.4 | 0.4  |      | 83     | 1    | 2   | 0   | 4.9  | 0.5  |
| GTI    | 202    | 0           | 9  | 1.9 | 0.2  |      | 182    | 0    | 8   | 0   | 6.6  | 0.2  |
| GVA    | 61     | 0           | 3  | 1.3 | -0.5 |      | 60     | 0    | 2   | 0   | 4.2  | 0.2  |
| GVB    | 83     | 0           | 1  | 1.3 | 0.1  |      | 77     | 0    | 1   | 0   | 4.2  | 0.6  |
| GVF    | 55     | 0           | 2  | 1.4 | -0.4 |      | 52     | 0    | 2   | 0   | 4.8  | 0.1  |
| GVG    | 52     | 0           | 0  | 1.5 | -0.7 |      | 50     | 0    | 0   | 0   | 3.4  | 0.1  |
| GVH    | 73     | 0           | 4  | 1.2 | -0.2 |      | 71     | 0    | 4   | 0   | 4.1  | 0.0  |
| GVL    | 23     | 0           | 4  | 1.5 | -0.2 |      | 23     | 0    | 4   | 0   | 5.0  | 0.6  |
| GVM    | 27     | 0           | 4  | 1.1 | -0.1 |      | 26     | 0    | 4   | 0   | 3.7  | 0.9  |
| GVR    | 160    | 0           | 3  | 1.4 | -0.1 |      | 154    | 0    | 3   | 0   | 4.7  | 0.4  |
| GVT    | 30     | 0           | 0  | 0.9 | -0.2 |      | 29     | 0    | 0   | 0   | 3.0  | 0.4  |
| GVW    | 54     | 0           | 4  | 1.3 | -0.4 |      | 51     | 0    | 4   | 0   | 4.0  | 0.3  |
| GVX    | 44     | 0           | 2  | 0.9 | 0.2  |      | 42     | 0    | 2   | 0   | 4.5  | 0.5  |
| GWV    | 95     | 0           | 2  | 1.2 | -0.1 |      | 92     | 0    | 2   | 0   | 3.9  | 0.2  |
| HAL    | 4058   | 0           | 50 | 2.5 | 1.0  |      | 3992   | 0    | 43  | 0   | 7.3  | 0.0  |
| HBI    | 179    | 0           | 4  | 1.2 | -0.4 |      | 173    | 0    | 4   | 0   | 4.7  | 0.4  |
| HBJ    | 127    | 0           | 1  | 1.1 | -0.3 |      | 122    | 0    | 1   | 0   | 4.3  | 1.2  |
| HMY    | 30     | 0           | 43 | 1.5 | 0.0  |      | 26     | 0    | 42  | 0   | 8.2  | 1.7  |
| IBE    | 3847   | 1           | 3  | 1.5 | 0.3  |      | 3774   | 0    | 4   | 0   | 7.6  | 0.4  |
| ICE    | 754    | 0           | 5  | 1.6 | 0.2  |      | 416    | 0    | 4   | 0   | 7.7  | 0.3  |
| ISR    | 53     | 0           | 4  | 2.0 | -0.2 |      | 25     | 0    | 0   | 0   | 6.0  | 0.6  |
| IWD    | 393    | 1           | 3  | 1.6 | -0.4 |      | 391    | 0    | 4   | 0   | 8.6  | 0.0  |
| JAL    | 1215   | 0           | 6  | 1.7 | 0.3  |      | 1189   | 1    | 7   | 0   | 8.1  | -0.1 |
| JAZ    | 1353   | 0           | 5  | 1.4 | 0.5  |      | 1352   | 1    | 7   | 0   | 8.0  | 0.5  |
| JBU    | 35     | 6           | 6  | 0.8 | 0.1  |      | 35     | 0    | 0   | 0   | 4.8  | 0.9  |
| KAC    | 86     | 0           | 5  | 1.2 | 0.6  |      | 83     | 0    | 5   | 0   | 4.7  | 0.6  |
| KAI    | 54     | 0           | 31 | 3.0 | 2.1  |      | 48     | 0    | 31  | 0   | 9.3  | 0.7  |
| KAL    | 1296   | 0           | 10 | 1.7 | -0.2 |      | 1293   | 0    | 12  | 0   | 8.1  | 0.0  |
| KLM    | 1431   | 0           | 9  | 1.5 | 0.1  |      | 1140   | 0    | 10  | 0   | 8.0  | 0.3  |
| LAN    | 745    | 0           | 1  | 1.5 | -0.1 |      | 740    | 0    | 2   | 0   | 5.3  | 0.8  |
| LCO    | 36     | 0           | 0  | 1.0 | -0.2 |      | 34     | 0    | 3   | 0   | 10.6 | 1.1  |
| LNE    | 184    | 1           | 3  | 1.4 | 0.0  |      | 183    | 0    | 4   | 0   | 8.7  | 0.3  |
| LNR    | 320    | 0           | 43 | 1.1 | -0.3 |      | 312    | 0    | 42  | 0   | 4.0  | 0.8  |
| LOT    | 254    | 0           | 2  | 1.6 | -0.6 |      | 144    | 1    | 4   | 0   | 6.5  | 0.8  |
| LTU    | 875    | 1           | 5  | 1.6 | 0.1  |      | 673    | 0    | 5   | 0   | 8.0  | 0.9  |
| LVG    | 228    | 0           | 7  | 1.5 | 0.2  |      | 204    | 0    | 7   | 0   | 8.6  | 1.3  |
| LXJ    | 46     | 0           | 46 | 0.9 | 0.1  |      | 40     | 0    | 43  | 0   | 4.8  | 0.1  |
| MAS    | 243    | 0           | 12 | 2.2 | 0.4  |      | 227    | 0    | 6   | 0   | 6.7  | 0.5  |
| MMZ    | 67     | 1           | 9  | 1.8 | 1.3  |      | 64     | 0    | 8   | 0   | 9.2  | 1.1  |
| MPD    | 399    | 1           | 4  | 1.9 | 0.5  |      | 381    | 0    | 5   | 0   | 8.2  | 0.5  |
| MPH    | 632    | 0           | 5  | 1.7 | -0.7 |      | 464    | 1    | 6   | 0   | 8.8  | 0.4  |
| MSR    | 124    | 0           | 1  | 1.2 | 0.6  |      | 119    | 0    | 1   | 0   | 4.6  | 0.5  |
| MXA    | 40     | 3           | 15 | 2.2 | 0.9  |      | 40     | 0    | 20  | 0   | 15.6 | -1.7 |



| IDENT. | N.REP. | TEMPERATURE |     |     |      | N.REP. | WIND |     |     |      | BIAS |
|--------|--------|-------------|-----|-----|------|--------|------|-----|-----|------|------|
|        |        | PG          | PR  | RMS | PG   |        | PR   | PC  | RMS |      |      |
| MXJ    | 184    | 1           | 8   | 1.8 | 0.3  | 111    | 0    | 6   | 0   | 6.8  | 0.7  |
| MYT    | 193    | 1           | 13  | 1.9 | -0.2 | 151    | 0    | 11  | 0   | 9.9  | 0.7  |
| NAO    | 95     | 0           | 13  | 2.1 | 0.2  | 84     | 0    | 13  | 0   | 10.0 | 0.7  |
| NCA    | 1033   | 0           | 4   | 1.6 | 0.1  | 786    | 1    | 5   | 0   | 7.4  | -0.1 |
| NVR    | 40     | 0           | 8   | 1.7 | -0.1 | 24     | 4    | 8   | 0   | 6.5  | 0.6  |
|        |        |             |     |     |      |        |      |     |     |      |      |
| NWA    | 8124   | 0           | 16  | 1.7 | 0.1  | 7951   | 0    | 16  | 0   | 7.6  | 0.5  |
| NZL    | 6022   | 0           | 7   | 1.2 | 0.0  | 6022   | 0    | 7   | 0   | 4.9  | 0.3  |
| OAE    | 448    | 1           | 33  | 1.4 | -0.3 | 333    | 0    | 40  | 0   | 8.3  | 0.5  |
| OOM    | 57     | 4           | 16  | 2.1 | 0.4  | 33     | 0    | 12  | 0   | 5.6  | 0.2  |
| OYK    | 596    | 0           | 39  | 1.2 | -0.3 | 573    | 0    | 39  | 0   | 3.9  | 0.9  |
|        |        |             |     |     |      |        |      |     |     |      |      |
| PAC    | 340    | 1           | 5   | 1.5 | -0.2 | 306    | 0    | 6   | 0   | 7.7  | 0.0  |
| PAL    | 1379   | 0           | 6   | 1.6 | -0.1 | 1368   | 0    | 9   | 0   | 8.6  | 0.6  |
| PBI    | 1154   | 1           | 44  | 1.4 | 0.0  | 1146   | 1    | 44  | 0   | 6.7  | 0.6  |
| PLM    | 236    | 2           | 3   | 1.7 | 0.7  | 212    | 0    | 3   | 0   | 7.6  | -0.1 |
| QFA    | 3534   | 0           | 33  | 1.4 | 0.4  | 3506   | 0    | 33  | 0   | 6.2  | 0.5  |
|        |        |             |     |     |      |        |      |     |     |      |      |
| RAM    | 310    | 0           | 3   | 1.8 | 0.2  | 243    | 1    | 5   | 0   | 8.5  | 0.7  |
| RCH    | 345    | 2           | 100 | 3.0 | 0.2  | 275    | 0    | 100 | 0   | 10.3 | 1.1  |
| RRR    | 32     | 3           | 9   | 2.2 | -0.3 | 31     | 0    | 6   | 0   | 9.1  | -0.3 |
| RYN    | 127    | 0           | 42  | 0.9 | -0.3 | 123    | 0    | 41  | 0   | 5.5  | 0.0  |
| RZO    | 556    | 1           | 4   | 1.8 | -0.1 | 537    | 0    | 5   | 0   | 9.3  | 0.1  |
|        |        |             |     |     |      |        |      |     |     |      |      |
| SAA    | 65     | 2           | 15  | 1.7 | 0.2  | 68     | 0    | 15  | 0   | 9.8  | -0.1 |
| SAS    | 891    | 0           | 55  | 1.1 | -0.1 | 861    | 0    | 56  | 0   | 4.4  | 0.8  |
| SER    | 323    | 0           | 54  | 1.4 | -0.1 | 307    | 0    | 53  | 0   | 4.4  | 1.1  |
| SEU    | 283    | 2           | 12  | 2.0 | -0.2 | 249    | 0    | 8   | 0   | 9.6  | 0.7  |
| SIA    | 728    | 0           | 3   | 1.3 | 0.2  | 720    | 0    | 3   | 0   | 4.6  | 0.3  |
|        |        |             |     |     |      |        |      |     |     |      |      |
| SLM    | 117    | 0           | 0   | 1.0 | 0.4  | 117    | 0    | 1   | 0   | 7.0  | 1.1  |
| SOO    | 42     | 0           | 2   | 1.8 | 0.5  | 44     | 0    | 0   | 0   | 5.0  | 1.0  |
| SQC    | 363    | 0           | 1   | 1.3 | 0.3  | 357    | 0    | 1   | 0   | 5.0  | 0.2  |
| SVH    | 307    | 0           | 5   | 1.2 | 1.0  | 307    | 0    | 5   | 0   | 4.3  | -0.4 |
| SWR    | 1333   | 0           | 4   | 1.2 | -0.4 | 1302   | 0    | 4   | 0   | 4.9  | 0.8  |
|        |        |             |     |     |      |        |      |     |     |      |      |
| TAG    | 52     | 4           | 37  | 2.4 | -0.5 | 51     | 0    | 37  | 0   | 6.4  | 0.8  |
| TAP    | 678    | 1           | 3   | 1.4 | -0.3 | 638    | 0    | 4   | 0   | 8.6  | 0.4  |
| TCV    | 110    | 0           | 11  | 3.8 | 3.2  | 110    | 0    | 11  | 0   | 11.4 | 1.2  |
| TCX    | 183    | 0           | 4   | 1.2 | 0.1  | 180    | 0    | 5   | 0   | 5.0  | 0.9  |
| TFL    | 223    | 0           | 7   | 1.5 | 0.1  | 194    | 1    | 8   | 0   | 8.1  | 0.8  |
|        |        |             |     |     |      |        |      |     |     |      |      |
| THA    | 196    | 0           | 8   | 1.5 | 0.3  | 196    | 0    | 8   | 0   | 5.0  | 0.5  |
| THT    | 848    | 0           | 12  | 1.1 | 0.3  | 768    | 0    | 9   | 0   | 5.5  | 0.2  |
| TPA    | 28     | 7           | 11  | 1.5 | 0.3  | 23     | 0    | 4   | 0   | 12.0 | -1.2 |
| TSC    | 50     | 0           | 2   | 1.6 | -0.3 | 33     | 0    | 0   | 0   | 4.5  | 0.3  |
| TSE    | 33     | 0           | 9   | 1.4 | 0.1  | 33     | 0    | 9   | 0   | 4.9  | 0.5  |
|        |        |             |     |     |      |        |      |     |     |      |      |
| UAE    | 918    | 0           | 3   | 1.3 | 0.4  | 908    | 0    | 3   | 0   | 4.5  | 0.3  |
| UAL    | 11626  | 0           | 32  | 1.3 | 0.0  | 11723  | 0    | 32  | 0   | 6.2  | 0.7  |
| UPS    | 1744   | 1           | 57  | 1.6 | 0.1  | 1277   | 0    | 59  | 0   | 6.5  | 0.6  |
| USA    | 1601   | 0           | 3   | 1.2 | 0.0  | 1550   | 0    | 2   | 0   | 4.8  | 0.8  |
| VIR    | 2345   | 0           | 3   | 1.3 | -0.2 | 2233   | 0    | 3   | 0   | 4.9  | 0.4  |
|        |        |             |     |     |      |        |      |     |     |      |      |
| VRG    | 32     | 6           | 44  | 1.9 | 0.4  | 32     | 0    | 50  | 0   | 15.5 | 1.0  |
| VVJ    | 28     | 0           | 14  | 1.1 | -0.2 | 28     | 0    | 14  | 0   | 9.9  | 1.8  |
| VVR    | 89     | 2           | 24  | 1.7 | 0.5  | 88     | 0    | 22  | 0   | 8.5  | -0.1 |
| WOA    | 345    | 1           | 9   | 1.4 | 0.3  | 271    | 0    | 12  | 0   | 9.8  | 0.5  |
| XLA    | 81     | 0           | 0   | 1.4 | 0.4  | 80     | 0    | 1   | 0   | 6.7  | 0.2  |
|        |        |             |     |     |      |        |      |     |     |      |      |
| YSS    | 88     | 0           | 1   | 1.2 | -0.1 | 81     | 0    | 1   | 0   | 5.8  | 0.0  |
| ZKN    | 89     | 0           | 2   | 1.3 | -0.4 | 85     | 0    | 2   | 0   | 5.4  | 0.7  |
| ZKS    | 80     | 0           | 1   | 1.0 | -0.2 | 78     | 0    | 1   | 0   | 4.2  | 1.1  |
| 9VS    | 74     | 0           | 8   | 1.1 | 0.1  | 73     | 0    | 8   | 0   | 4.5  | 0.3  |

| IDENT. | N.REP. | TEMPERATURE |    |     |      | N.REP. | PG | WIND |    |      |      |
|--------|--------|-------------|----|-----|------|--------|----|------|----|------|------|
|        |        | PG          | PR | RMS | BIAS |        |    | PR   | PC | RMS  | BIAS |
| AU     | 41639  | 0           | 19 | 1.3 | 0.6  | 41649  | 0  | 16   | 0  | 5.2  | 0.4  |
| B-     | 16798  | 1           | 62 | 1.6 | 0.7  | 13337  | 1  | 68   | 0  | 5.0  | 0.1  |
| EU     | 243887 | 0           | 28 | 1.2 | 0.3  | 243887 | 0  | 28   | 0  | 4.4  | 0.3  |
| HK     | 1226   | 0           | 7  | 1.3 | 0.4  | 1226   | 0  | 7    | 0  | 5.4  | 0.3  |
| HL     | 25     | 0           | 0  | 1.6 | -0.2 | 25     | 0  | 0    | 0  | 7.0  | 0.6  |
| JP     | 63041  | 1           | 67 | 1.6 | 0.8  | 63041  | 0  | 66   | 0  | 4.7  | 0.3  |
| LN     | 34     | 0           | 53 | 2.6 | 0.5  | 34     | 0  | 53   | 0  | 12.3 | 4.3  |
| MK     | 2827   | 0           | 4  | 1.7 | 1.4  | 2827   | 0  | 4    | 0  | 6.5  | 1.4  |
| SA     | 5459   | 0           | 7  | 1.1 | 0.5  | 5459   | 0  | 8    | 0  | 5.3  | 0.4  |
| TN     | 68     | 12          | 46 | 3.3 | -0.2 | 70     | 0  | 33   | 0  | 6.0  | 0.6  |
| UA     | 299612 | 0           | 98 | 1.2 | -0.2 | 299338 | 0  | 98   | 0  | 5.0  | 0.5  |

| IDENT.    | N.REP.  | TEMPERATURE |    |     |      | N.REP.  | PG | WIND |    |     |      |
|-----------|---------|-------------|----|-----|------|---------|----|------|----|-----|------|
|           |         | PG          | PR | RMS | BIAS |         |    | PR   | PC | RMS | BIAS |
| N         | 6560    | 8           | 20 | 1.5 | -0.1 | 5718    | 0  | 13   | 0  | 5.0 | 0.6  |
| S         | 27      | 0           | 0  | 1.3 | -0.3 | 27      | 0  | 0    | 0  | 4.6 | -0.7 |
| US AMDARS | 1118629 | 0           | 68 | 1.3 | 0.3  | 1118620 | 0  | 68   | 0  | 5.1 | 0.6  |

TABLE 4B

**MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS**  
**MONITORING CENTRE: EXETER**  
**MONTH: Nov 2005**

**Monitoring procedures**

**Period** :One calendar month.

**Data monitored** :Statistics for each airline carrier.

**Area monitored** :90°N - 90°S, 180°W - 180°E.

**Standard of comparison** :Background field from UKMO global model.

**Observation times** :All hours combined.

**Level(s) monitored** :1000.0 – 300.1 hPa

**Elements monitored** :TEMP in °C ; WIND in m s<sup>-1</sup>

**Parameters monitored**

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

**GROSS ERROR LIMITS** :10.0 °C ; 60 m s<sup>-1</sup> Vector Wind

**SELECTION CRITERIA** :N REP ≥ 20

**NB:** All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".



| IDENT. | N.REP. | TEMPERATURE |    |     |      | BIAS   | N.REP. | WIND |    |      |      | BIAS |
|--------|--------|-------------|----|-----|------|--------|--------|------|----|------|------|------|
|        |        | PG          | PR | RMS | PG   |        |        | PR   | PC | RMS  |      |      |
| AAL    | 87     | 2           | 32 | 1.8 | 0.6  | 84     | 0      | 33   | 0  | 6.1  | 0.8  |      |
| ACA    | 68     | 0           | 18 | 1.6 | -0.4 | 60     | 0      | 18   | 0  | 8.2  | 1.6  |      |
| AFR    | 67     | 0           | 4  | 1.1 | 0.1  | 64     | 0      | 0    | 0  | 5.5  | 0.8  |      |
| AFZ    | 29860  | 0           | 69 | 1.5 | -0.3 | 29860  | 0      | 70   | 0  | 4.8  | 0.3  |      |
| AMT    | 40     | 0           | 35 | 0.9 | 0.0  | 37     | 0      | 32   | 0  | 4.8  | 0.1  |      |
| ANZ    | 269    | 2           | 17 | 1.1 | 0.3  | 272    | 0      | 16   | 0  | 5.4  | 0.7  |      |
| AXF    | 25     | 0           | 64 | 0.5 | 0.3  | 25     | 0      | 64   | 0  | 5.6  | -1.5 |      |
| CFC    | 39     | 3           | 13 | 1.9 | 0.7  | 31     | 0      | 10   | 0  | 14.4 | -3.1 |      |
| CKS    | 114    | 2           | 25 | 1.9 | -0.2 | 71     | 0      | 30   | 0  | 10.6 | -0.4 |      |
| CNJ    | 625870 | 0           | 85 | 1.6 | 0.5  | 625870 | 0      | 85   | 0  | 5.6  | -0.6 |      |
| COA    | 38     | 0           | 5  | 1.0 | 0.2  | 36     | 0      | 6    | 0  | 5.7  | -0.1 |      |
| DAL    | 93     | 1           | 47 | 1.4 | 0.6  | 86     | 0      | 49   | 0  | 7.1  | 0.0  |      |
| EIA    | 21     | 0           | 5  | 1.2 | -0.2 | 21     | 0      | 100  | 0  | 21.0 | 0.6  |      |
| FDX    | 512    | 0           | 41 | 1.4 | 0.4  | 287    | 0      | 40   | 0  | 7.4  | 0.4  |      |
| GCO    | 55     | 0           | 7  | 2.0 | -0.6 | 54     | 0      | 100  | 0  | 13.1 | 1.0  |      |
| GEC    | 187    | 0           | 24 | 1.7 | 0.2  | 163    | 0      | 29   | 0  | 10.4 | 1.7  |      |
| HAL    | 437    | 2           | 56 | 2.5 | 0.9  | 427    | 0      | 42   | 0  | 8.2  | 1.1  |      |
| ICE    | 70     | 0           | 6  | 2.0 | -0.1 | 39     | 3      | 8    | 0  | 6.8  | -0.2 |      |
| JAL    | 44     | 0           | 5  | 1.1 | 0.2  | 44     | 0      | 5    | 0  | 6.2  | -1.5 |      |
| JAZ    | 41     | 0           | 12 | 1.1 | 0.1  | 41     | 0      | 12   | 0  | 6.0  | 1.5  |      |
| KAL    | 36     | 6           | 17 | 1.5 | -0.5 | 36     | 0      | 8    | 0  | 7.7  | 1.5  |      |
| KIW    | 81     | 2           | 47 | 2.8 | 1.2  | 96     | 1      | 16   | 0  | 8.5  | 0.3  |      |
| LAN    | 52     | 0           | 2  | 1.1 | 0.2  | 53     | 0      | 6    | 0  | 5.0  | 1.0  |      |
| MAS    | 26     | 0           | 12 | 1.9 | -0.1 | 27     | 0      | 11   | 0  | 5.8  | 1.2  |      |
| NCA    | 67     | 0           | 1  | 1.2 | -0.1 | 55     | 0      | 4    | 0  | 7.0  | 0.4  |      |
| NWA    | 168    | 0           | 11 | 1.5 | 0.1  | 151    | 0      | 9    | 0  | 6.6  | -0.5 |      |
| NZL    | 23111  | 0           | 56 | 1.2 | 0.1  | 23110  | 0      | 56   | 0  | 4.5  | 0.2  |      |
| OCE    | 30     | 3           | 10 | 3.2 | 2.5  | 30     | 0      | 0    | 0  | 3.9  | -0.1 |      |
| PAC    | 49     | 0           | 2  | 1.2 | 0.1  | 31     | 0      | 10   | 0  | 10.1 | -1.1 |      |
| PAL    | 29     | 0           | 28 | 1.0 | -0.1 | 29     | 0      | 34   | 0  | 7.6  | -0.6 |      |
| QFA    | 70     | 4           | 39 | 0.8 | 0.3  | 70     | 0      | 39   | 0  | 5.1  | 1.0  |      |
| RRR    | 86     | 10          | 27 | 3.9 | 2.3  | 78     | 0      | 1    | 0  | 7.1  | 0.5  |      |
| SFR    | 67     | 4           | 46 | 2.9 | 1.1  | 68     | 0      | 12   | 0  | 13.7 | -0.5 |      |
| SIA    | 68     | 0           | 4  | 0.9 | 0.3  | 70     | 0      | 4    | 0  | 4.0  | 0.5  |      |
| SKI    | 210    | 3           | 43 | 2.8 | 0.1  | 337    | 1      | 44   | 0  | 13.0 | 1.1  |      |
| SQC    | 20     | 0           | 0  | 0.7 | 0.2  | 20     | 0      | 0    | 0  | 3.8  | 0.9  |      |
| SVH    | 20885  | 0           | 60 | 1.4 | 0.9  | 20885  | 0      | 60   | 0  | 3.8  | 0.6  |      |
| THT    | 111    | 0           | 55 | 1.0 | -0.2 | 70     | 0      | 46   | 0  | 4.8  | -0.1 |      |
| UAE    | 83     | 0           | 2  | 1.2 | 0.7  | 83     | 0      | 2    | 0  | 5.1  | 0.8  |      |
| UAL    | 190    | 4           | 36 | 1.7 | -0.3 | 203    | 0      | 34   | 0  | 9.4  | 2.0  |      |
| UPS    | 147    | 0           | 50 | 1.5 | -0.3 | 82     | 0      | 38   | 0  | 7.4  | 1.1  |      |
| WOA    | 124    | 1           | 9  | 2.0 | 0.4  | 90     | 0      | 32   | 0  | 15.9 | 3.8  |      |

| IDENT. | N.REP. | TEMPERATURE |    |     |      | BIAS   | N.REP. | WIND |    |     |     | BIAS |
|--------|--------|-------------|----|-----|------|--------|--------|------|----|-----|-----|------|
|        |        | PG          | PR | RMS | PG   |        |        | PR   | PC | RMS |     |      |
| AU     | 45780  | 0           | 62 | 1.2 | 0.3  | 45782  | 0      | 60   | 0  | 4.4 | 0.2 |      |
| B-     | 68772  | 0           | 72 | 1.3 | 0.6  | 65836  | 0      | 76   | 0  | 4.5 | 0.2 |      |
| EU     | 670510 | 0           | 69 | 1.0 | 0.1  | 665813 | 0      | 69   | 0  | 3.8 | 0.1 |      |
| HK     | 3110   | 0           | 85 | 1.2 | 0.5  | 3110   | 0      | 85   | 0  | 4.1 | 0.0 |      |
| JP     | 268087 | 0           | 82 | 1.2 | 0.4  | 268087 | 0      | 82   | 0  | 4.2 | 0.5 |      |
| MK     | 2780   | 0           | 49 | 1.3 | 0.5  | 2781   | 0      | 48   | 0  | 4.0 | 0.7 |      |
| SA     | 4485   | 0           | 66 | 1.6 | 0.3  | 4485   | 0      | 66   | 0  | 5.1 | 0.4 |      |
| UA     | 245425 | 0           | 98 | 1.0 | -0.2 | 245095 | 0      | 98   | 0  | 4.3 | 0.3 |      |

| IDENT.    | N.REP.  | TEMPERATURE |    |     |     | BIAS    | N.REP. | WIND |    |     |     | BIAS |
|-----------|---------|-------------|----|-----|-----|---------|--------|------|----|-----|-----|------|
|           |         | PG          | PR | RMS | PG  |         |        | PR   | PC | RMS |     |      |
| N         | 66      | 47          | 71 | 4.3 | 0.7 |         | 24     | 0    | 17 | 0   | 6.7 | -0.2 |
| US AMDARS | 1800911 | 0           | 81 | 1.2 | 0.3 | 1796437 | 0      | 82   | 0  | 4.2 | 0.2 |      |



Figure 3a. AIRCRAFT 300 - 150 hPa mean daily count. NOVEMBER 2005  
Observations with O-B vector difference greater than 60 ms<sup>-1</sup> excluded  
Global average number of observations in 24 hours = 65892

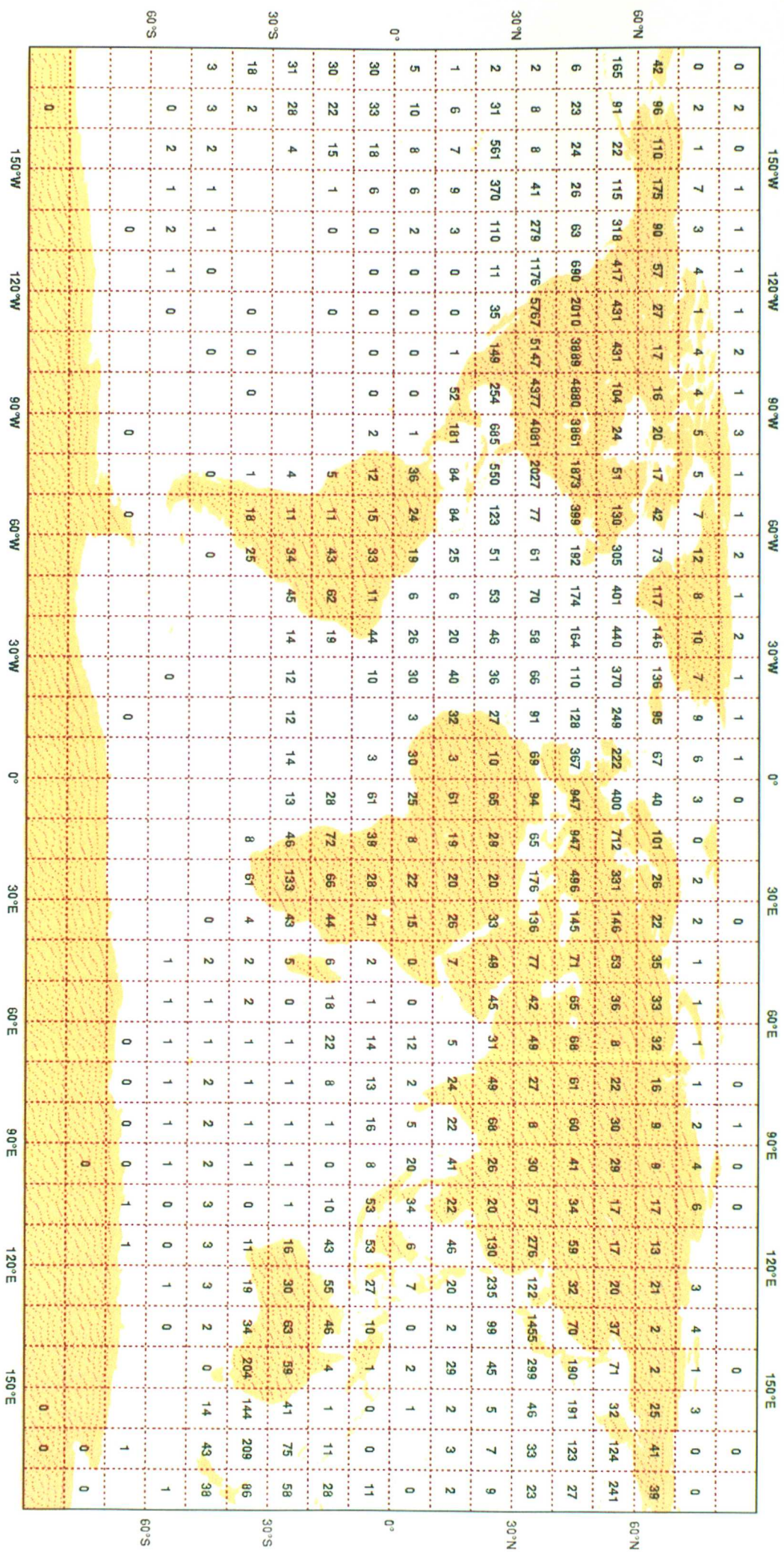








Figure 4a. AIRCRAFT 300 - 150 hPa mean winds. NOVEMBER 2005  
Observations with O-B vector difference greater than 60 ms-1 excluded  
Arrows are plotted where greater than 30 obs are present

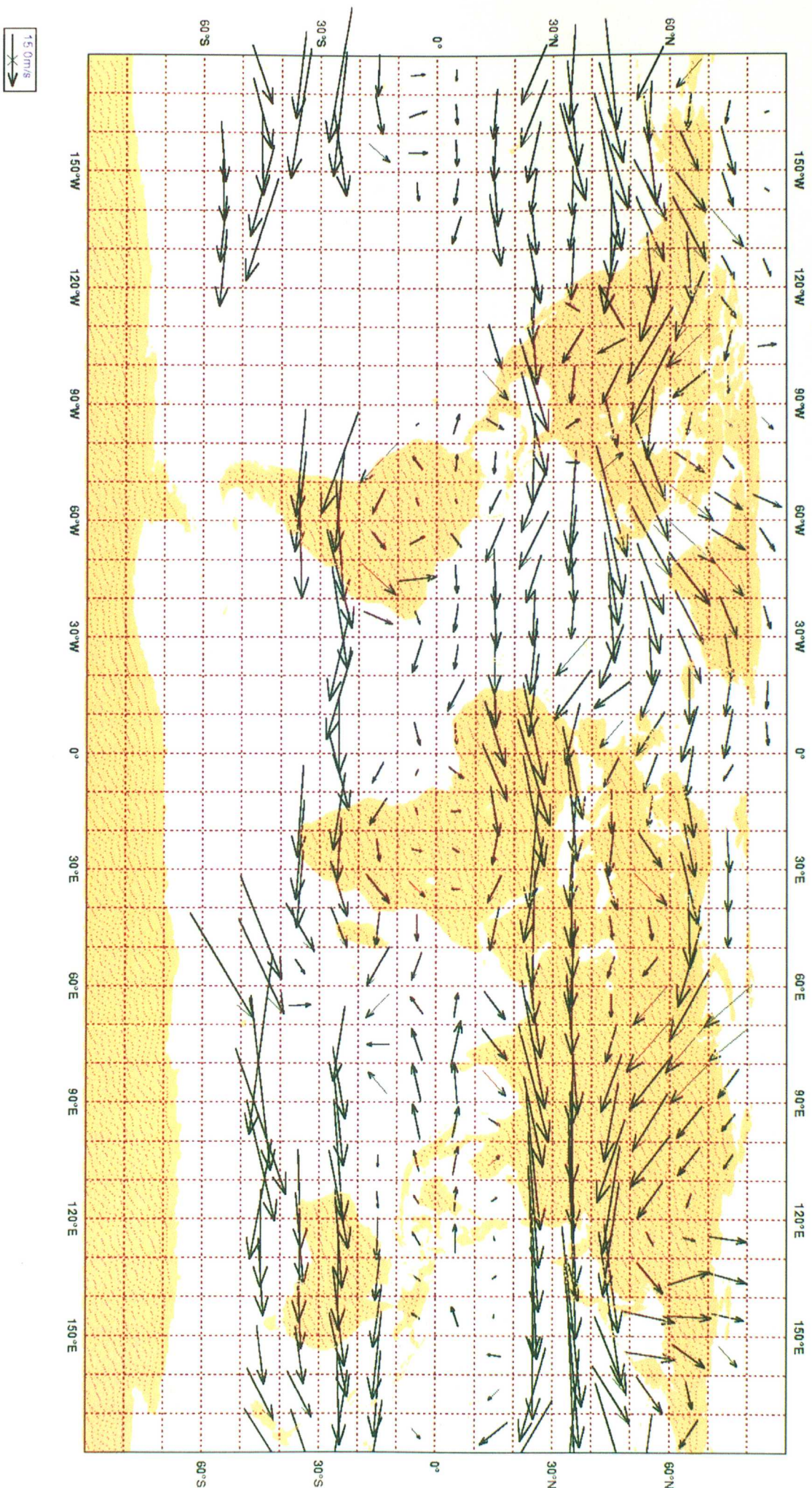




Figure 4b. AIRCRAFT 1000 - 301 hPa mean winds. NOVEMBER 2005  
Observations with O-B vector difference greater than 60 ms-1 excluded  
Arrows are plotted where greater than 30 obs are present

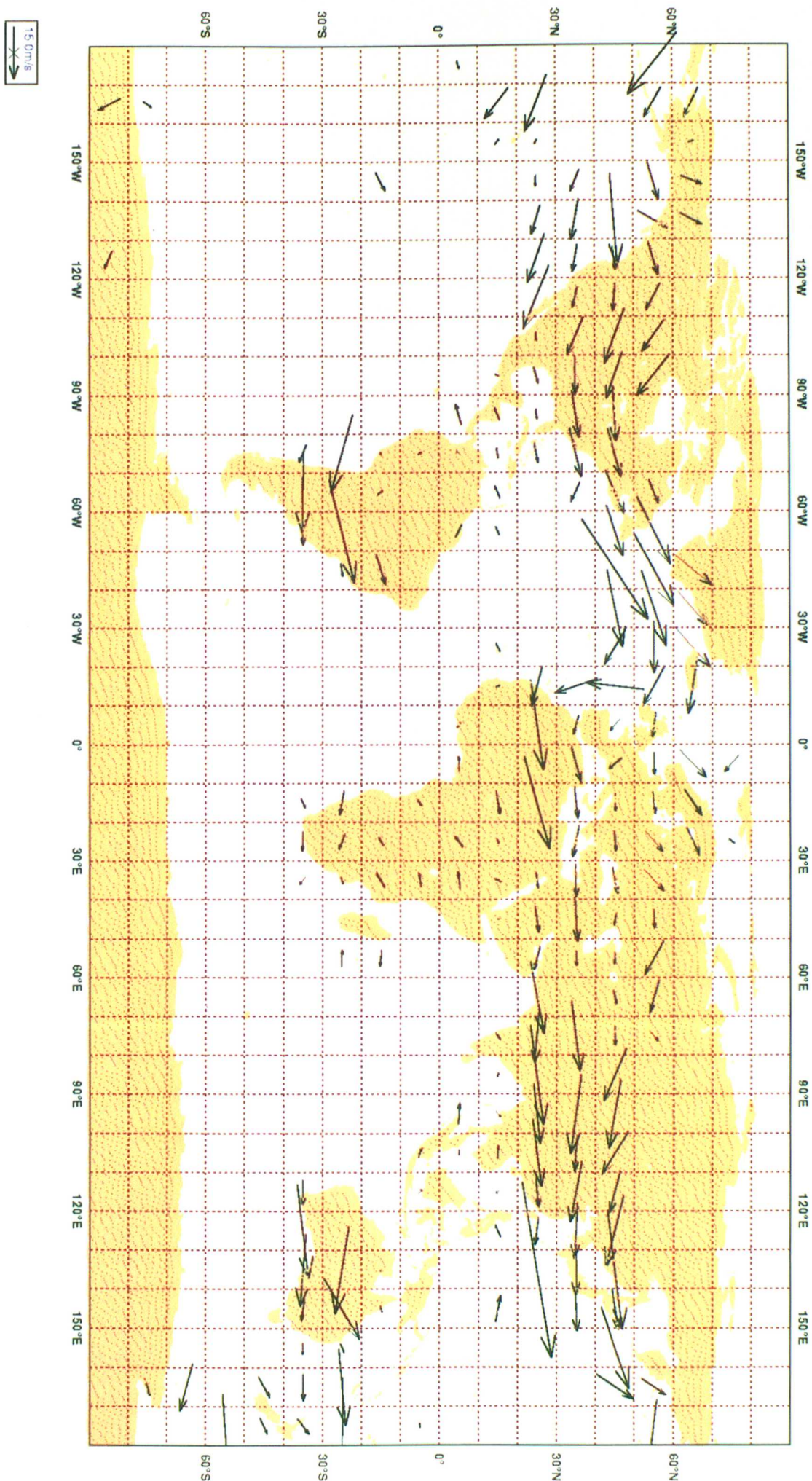




**Figure 5a. AIRCRAFT 300 - 150 hPa mean O-B winds. NOVEMBER 2005**  
**Observations with O-B vector difference greater than 60 ms-1 excluded**  
**Arrows are plotted where greater than 30 obs are present**

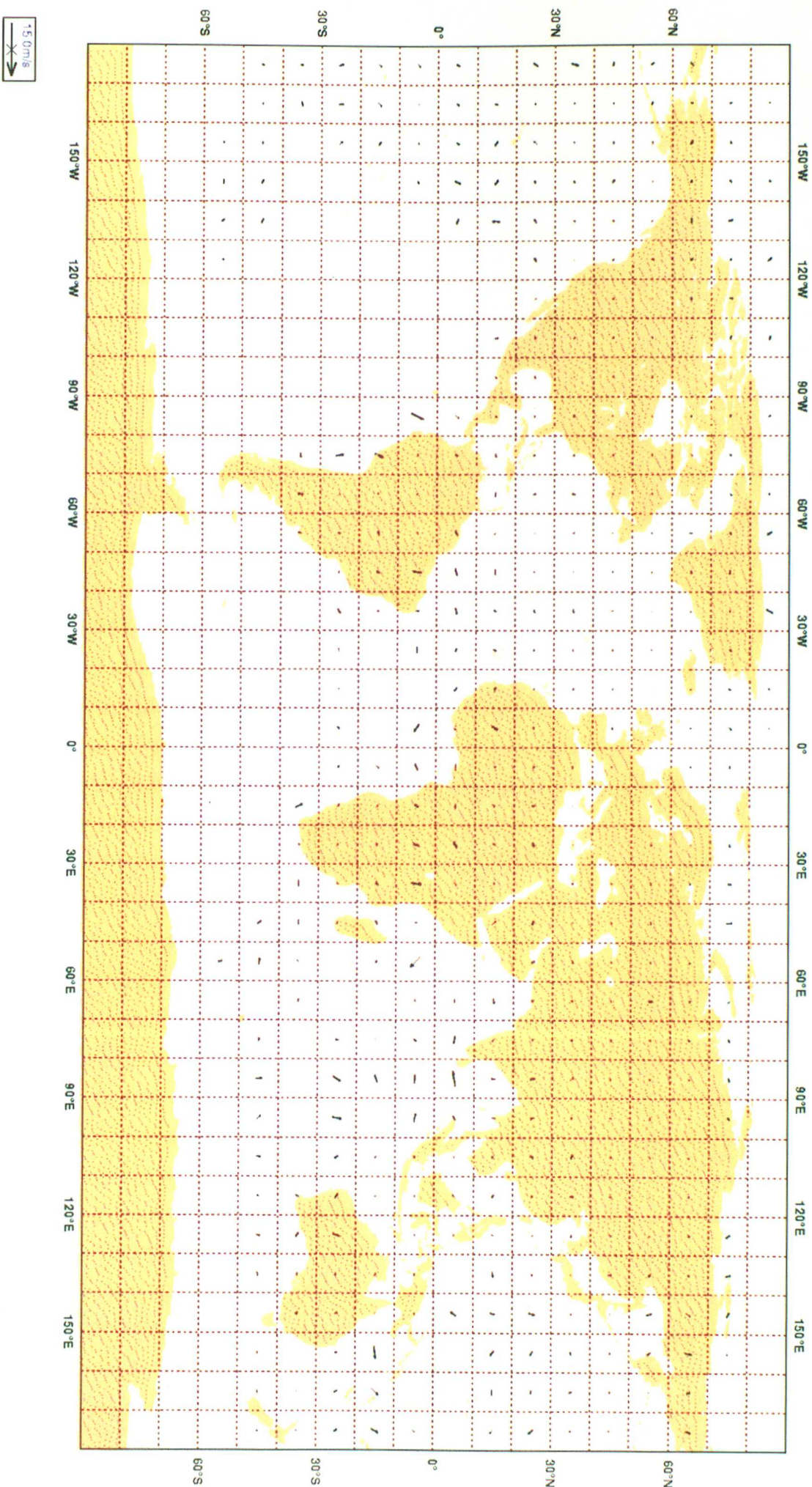




Figure 5b. AIRCRAFT 1000 - 301 hPa mean O-B winds. NOVEMBER 2005  
Observations with O-B vector difference greater than 60 ms<sup>-1</sup> excluded  
Arrows are plotted where greater than 30 obs are present

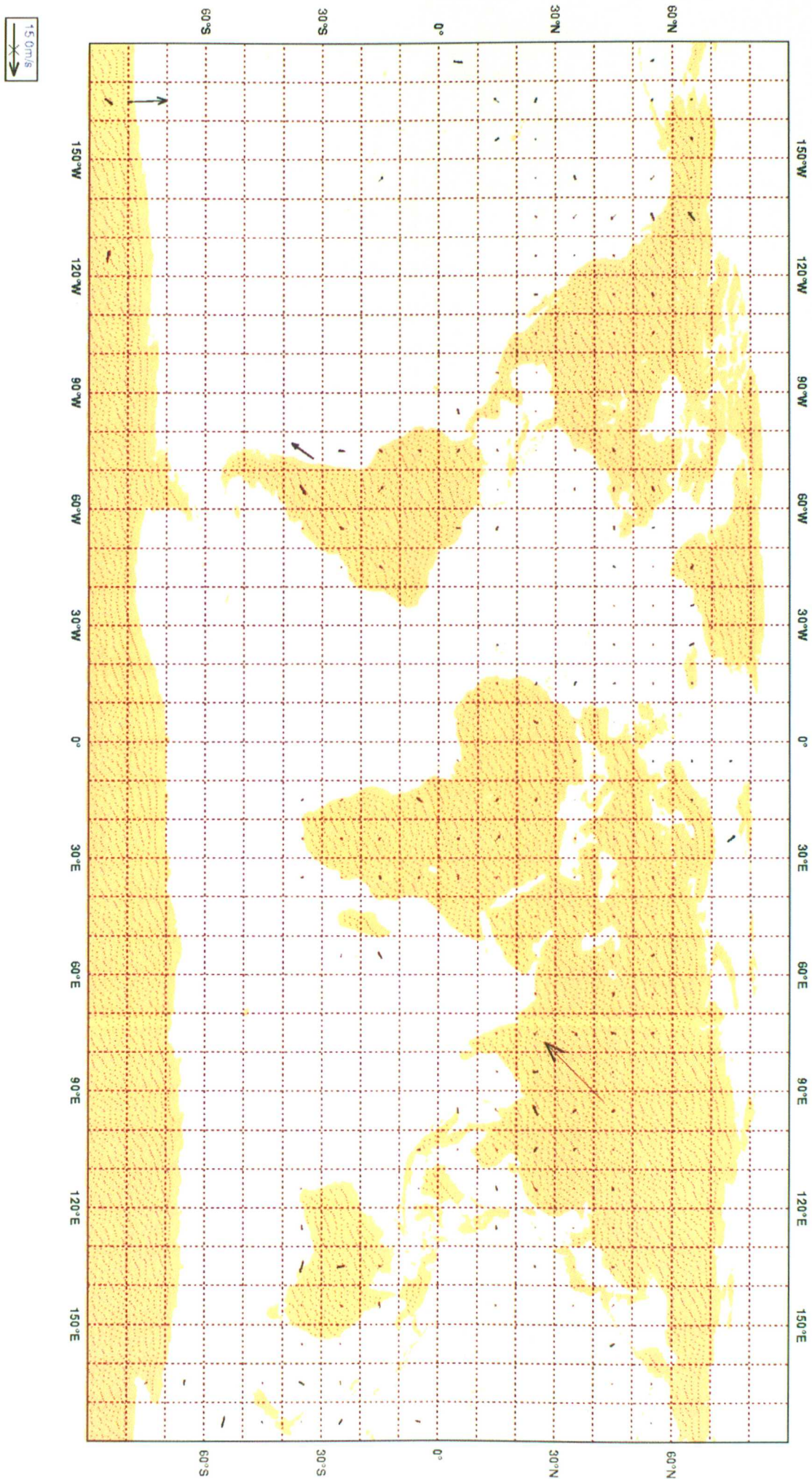
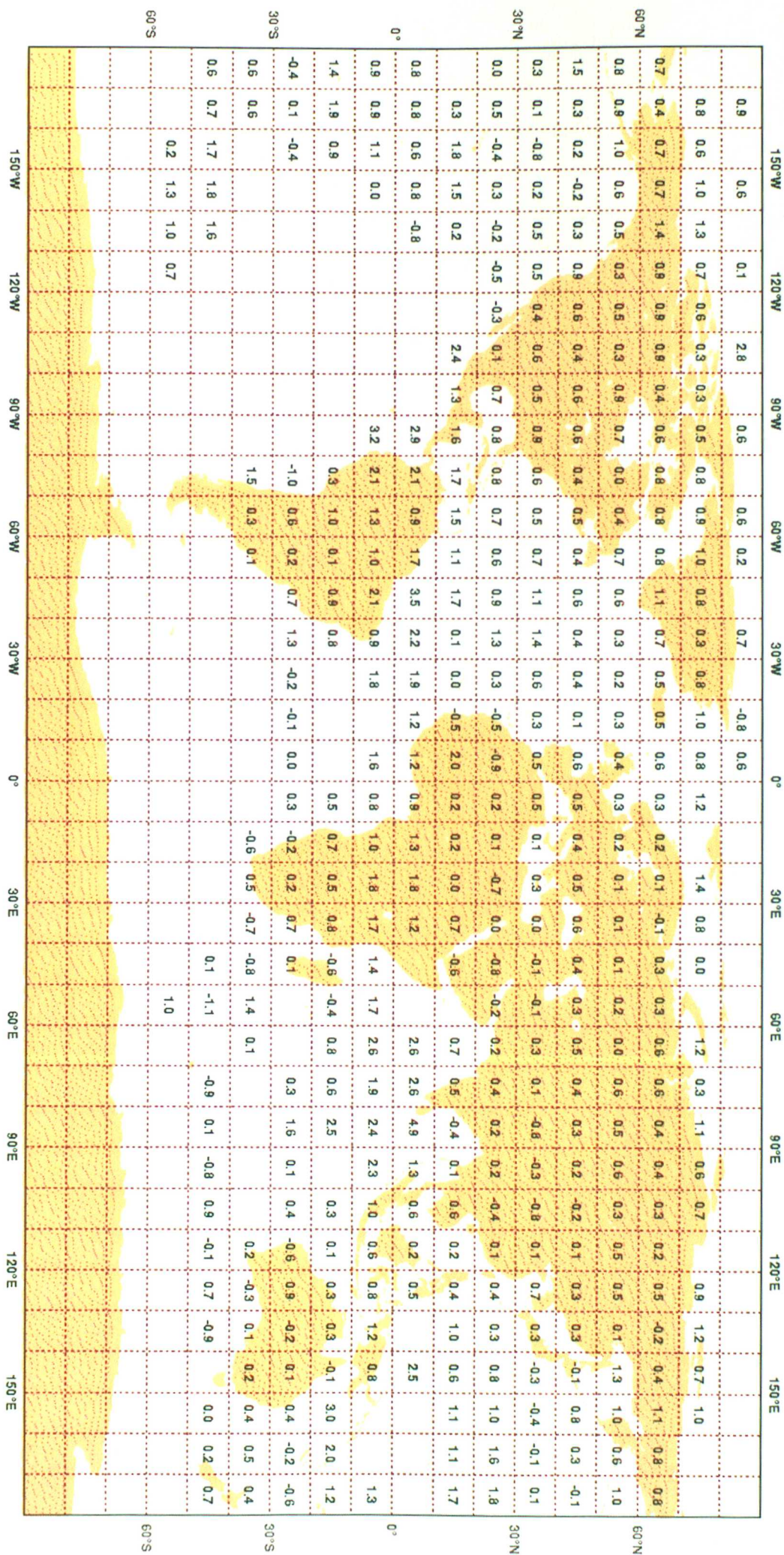




**Figure 6a. AIRCRAFT 300 - 150 hPa mean O-B speeds (ms<sup>-1</sup>). NOVEMBER 2005**  
**Observations with O-B vector difference greater than 60 ms<sup>-1</sup> excluded**  
**Values are printed where greater than 30 obs are present**





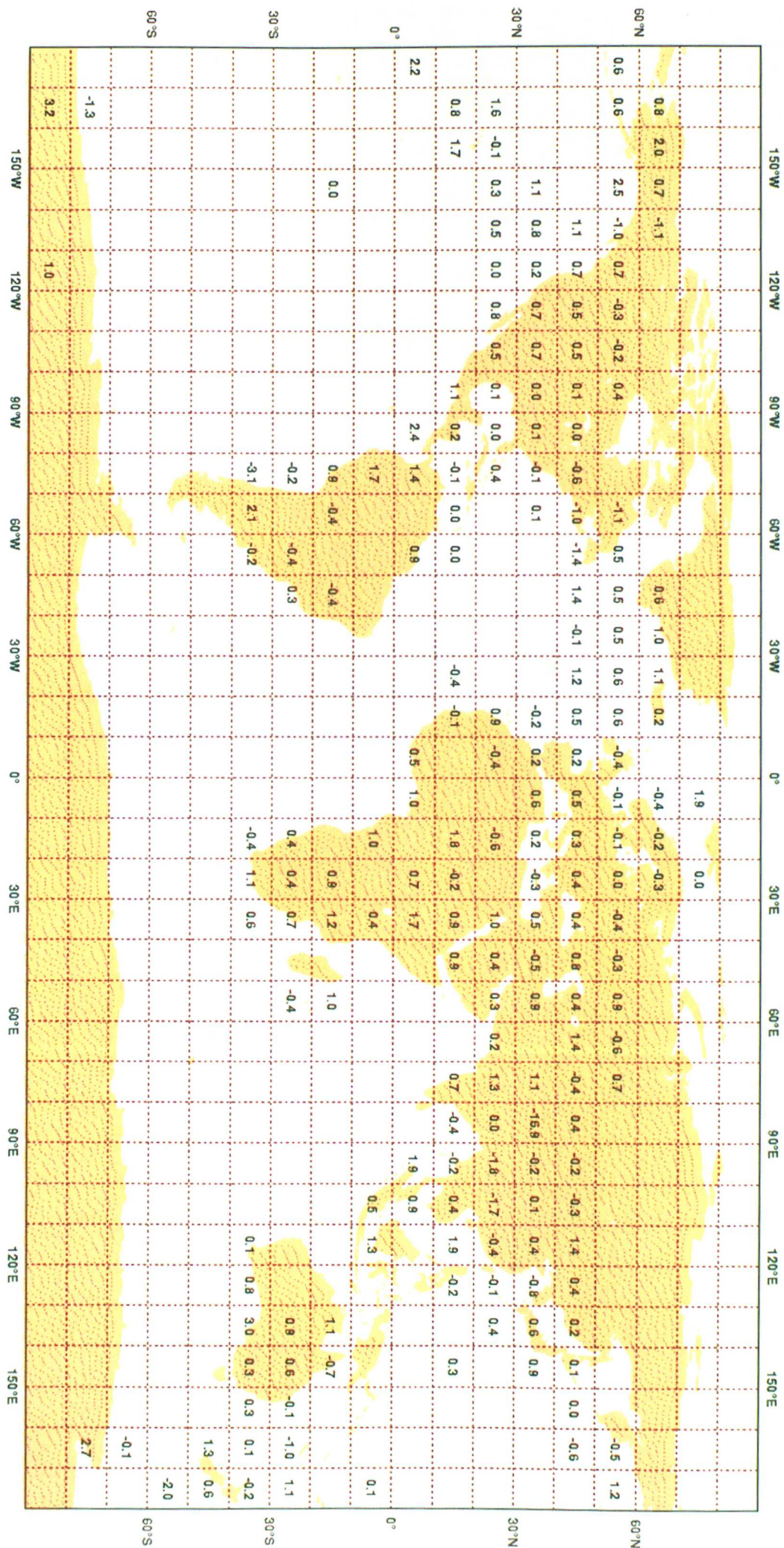




Figure 7a. AIRCRAFT 300 - 150 hPa RMS O-B vector (ms-1). NOVEMBER 2005  
 Observations with O-B vector difference greater than 60 ms-1 excluded  
 Values are printed where greater than 30 obs are present

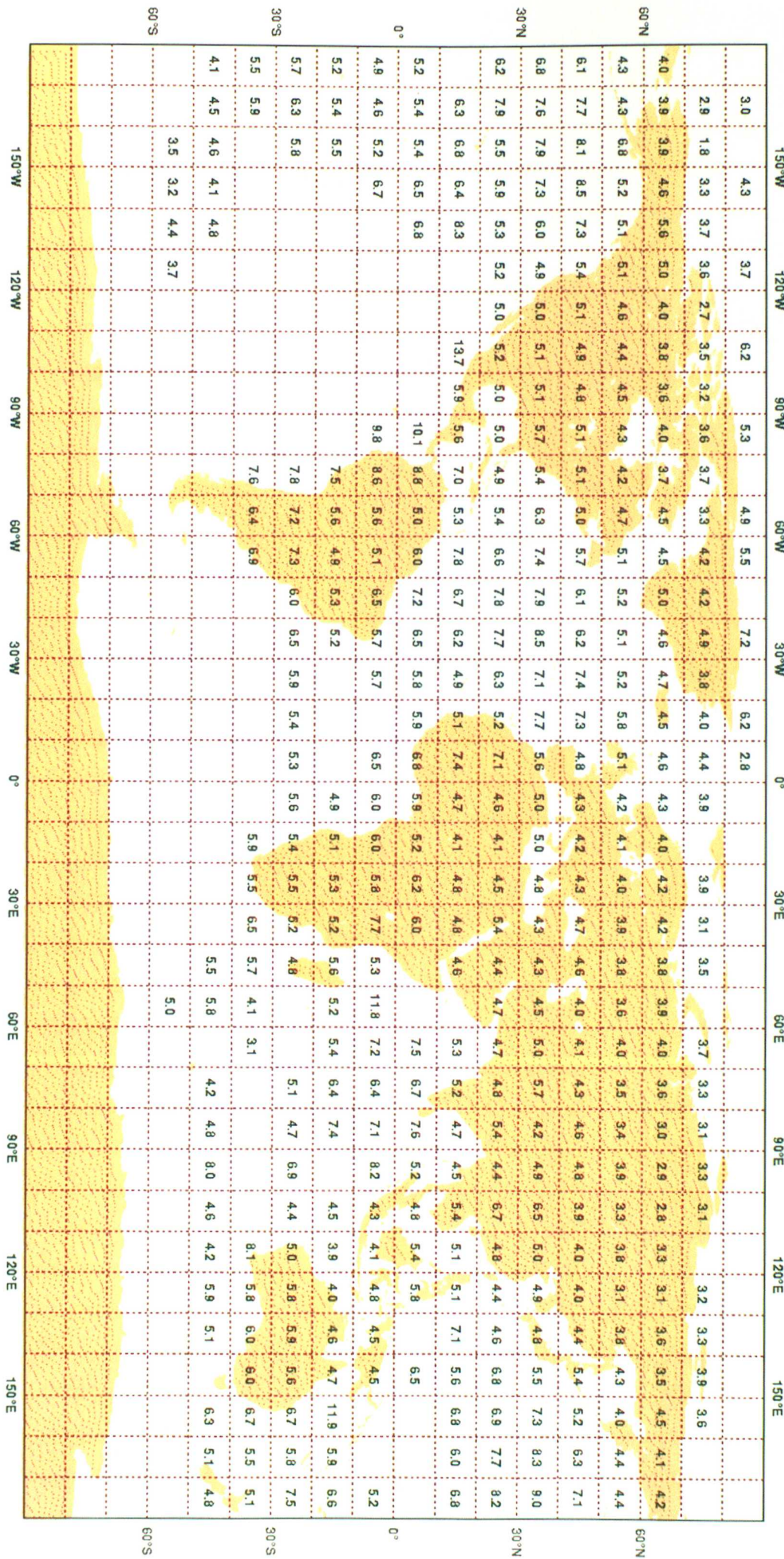








TABLE 5

**MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS**  
**MONITORING CENTRE: EXETER**  
**MONTH: Nov 2005**

**Monitoring procedures**

|                               |                                                             |                                                                                                                         |
|-------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Period</b>                 |                                                             | :One calendar month.                                                                                                    |
| <b>Data monitored</b>         |                                                             | :Reports from each unique identifier for radiosonde TEMPs.                                                              |
| <b>Area monitored</b>         |                                                             | :90°N - 90°S, 180°W - 180°E.                                                                                            |
| <b>Standard of comparison</b> |                                                             | :Background field from UKMO global model.                                                                               |
| <b>Observation times</b>      |                                                             | :00 UTC and 12 UTC.                                                                                                     |
| <b>Level(s) monitored</b>     |                                                             | :Standard levels between 1000.0 - 30.0 hPa                                                                              |
| <b>Element monitored</b>      |                                                             | :GEOPOTENTIAL HEIGHT IN metres                                                                                          |
| <b>Parameters monitored</b>   | :NUM OBS                                                    | :Number of observations available at level shown during period.                                                         |
|                               | :NUM GROSS                                                  | :Number of gross errors at level shown during period.                                                                   |
|                               | :% REJ                                                      | :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors. |
|                               | :SD                                                         | :SD of difference of observations from background values at level shown excluding those with gross errors.              |
|                               | :BIAS                                                       | :Mean difference of observations from background values at level shown excluding those with gross errors.               |
|                               | :RMS                                                        | :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.   |
|                               | :NUM LEVELS                                                 | :Number of levels satisfying selection criteria.                                                                        |
| <b>GROSS ERROR LIMITS</b>     | :Defined in Appendix I.1                                    |                                                                                                                         |
| <b>SELECTION CRITERIA</b>     | : ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS. |                                                                                                                         |

**ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS**

| WMO<br>IDENT | OBS<br>TIME | ELM | LEV  | LAT/LONG | NUM<br>OBS | NUM<br>GROSS | SD    | BIAS   | RMS   | NUM<br>LEVELS |
|--------------|-------------|-----|------|----------|------------|--------------|-------|--------|-------|---------------|
| 20674        | 12          | Z   | 250  | 73/ 80   | 20         | 1            | 69.4  | -37.5  | 78.9  | 4             |
| 23418        | 00          | Z   | 250  | 65/ 57   | 23         | 0            | 34.4  | 118.5  | 123.4 | 10            |
| 23418        | 12          | Z   | 250  | 65/ 57   | 23         | 0            | 33.8  | 124.4  | 128.9 | 8             |
| 24343        | 00          | Z   | 500  | 67/ 123  | 16         | 0            | 32.9  | -40.3  | 52.0  | 5             |
| 31168        | 00          | Z   | 150  | 56/ 138  | 10         | 1            | 72.8  | 108.0  | 130.3 | 5             |
| 37018        | 00          | Z   | 1000 | 44/ 39   | 18         | 3            | 38.9  | -34.6  | 52.1  | 4             |
| 37018        | 12          | Z   | 1000 | 44/ 39   | 25         | 4            | 31.1  | -30.2  | 43.3  | 6             |
| 42101        | 12          | Z   | 150  | 30/ 76   | 10         | 0            | 80.8  | -65.4  | 104.0 | 4             |
| 42182        | 00          | Z   | 1000 | 29/ 77   | 11         | 12           | 3.6   | -92.6  | 92.7  | 11            |
| 42182        | 12          | Z   | 1000 | 29/ 77   | 2          | 28           | 0.5   | -99.5  | 99.5  | 6             |
| 42314        | 00          | Z   | 150  | 27/ 95   | 13         | 0            | 51.0  | -129.0 | 138.7 | 5             |
| 42339        | 00          | Z   | 200  | 26/ 73   | 10         | 1            | 65.3  | -125.9 | 141.8 | 8             |
| 42361        | 00          | Z   | 1000 | 26/ 78   | 9          | 5            | 10.1  | -90.7  | 91.2  | 6             |
| 42369        | 00          | Z   | 200  | 27/ 81   | 16         | 0            | 58.2  | -96.4  | 112.6 | 8             |
| 42369        | 12          | Z   | 100  | 27/ 81   | 21         | 0            | 91.0  | -105.9 | 139.6 | 6             |
| 42379        | 00          | Z   | 200  | 27/ 83   | 10         | 0            | 72.5  | -91.5  | 116.8 | 5             |
| 42410        | 00          | Z   | 1000 | 26/ 92   | 6          | 17           | 3.9   | -92.8  | 92.9  | 8             |
| 42410        | 12          | Z   | 200  | 26/ 92   | 15         | 0            | 69.0  | -139.2 | 155.4 | 7             |
| 42492        | 00          | Z   | 100  | 26/ 85   | 11         | 0            | 97.7  | -131.0 | 163.4 | 4             |
| 42492        | 12          | Z   | 100  | 26/ 85   | 11         | 1            | 73.7  | -195.6 | 209.1 | 5             |
| 42647        | 00          | Z   | 150  | 23/ 73   | 19         | 2            | 109.9 | -132.6 | 172.2 | 12            |
| 42647        | 12          | Z   | 70   | 23/ 73   | 13         | 2            | 132.7 | 202.1  | 241.7 | 7             |
| 42667        | 00          | Z   | 200  | 23/ 77   | 21         | 0            | 57.0  | -117.5 | 130.6 | 6             |
| 42667        | 12          | Z   | 200  | 23/ 77   | 23         | 0            | 88.8  | -53.0  | 103.4 | 5             |
| 42701        | 00          | Z   | 150  | 23/ 85   | 11         | 2            | 59.7  | -129.5 | 142.6 | 6             |
| 42701        | 12          | Z   | 150  | 23/ 85   | 18         | 0            | 70.0  | -149.4 | 165.0 | 6             |
| 42809        | 00          | Z   | 200  | 23/ 88   | 17         | 0            | 39.1  | -112.7 | 119.3 | 9             |
| 42809        | 12          | Z   | 200  | 23/ 88   | 19         | 4            | 41.8  | -186.1 | 190.7 | 10            |
| 42867        | 00          | Z   | 100  | 21/ 79   | 13         | 0            | 102.8 | -167.6 | 196.6 | 8             |
| 42867        | 12          | Z   | 100  | 21/ 79   | 8          | 2            | 64.7  | -144.7 | 158.6 | 7             |
| 42971        | 12          | Z   | 100  | 20/ 86   | 11         | 2            | 91.4  | -136.5 | 164.2 | 6             |
| 43003        | 00          | Z   | 100  | 19/ 73   | 11         | 5            | 206.4 | -144.2 | 251.7 | 12            |
| 43003        | 12          | Z   | 1000 | 19/ 73   | 29         | 0            | 8.8   | -61.1  | 61.8  | 10            |
| 43128        | 00          | Z   | 150  | 17/ 78   | 12         | 2            | 50.7  | -143.4 | 152.1 | 5             |
| 43150        | 00          | Z   | 1000 | 18/ 83   | 27         | 1            | 9.5   | -76.5  | 77.1  | 12            |
| 43150        | 12          | Z   | 1000 | 18/ 83   | 24         | 2            | 8.9   | -84.2  | 84.6  | 8             |
| 43185        | 00          | Z   | 200  | 16/ 81   | 23         | 0            | 71.8  | -80.3  | 107.7 | 7             |
| 43192        | 00          | Z   | 1000 | 15/ 74   | 8          | 19           | 2.2   | -96.0  | 96.0  | 6             |
| 43333        | 00          | Z   | 150  | 12/ 93   | 23         | 0            | 71.0  | -133.0 | 150.8 | 6             |
| 43333        | 12          | Z   | 150  | 12/ 93   | 17         | 3            | 39.2  | -197.6 | 201.4 | 5             |
| 43346        | 00          | Z   | 150  | 11/ 80   | 12         | 0            | 93.7  | -90.8  | 130.4 | 5             |
| 43346        | 12          | Z   | 1000 | 11/ 80   | 15         | 0            | 35.6  | -13.8  | 38.2  | 9             |
| 43353        | 00          | Z   | 1000 | 10/ 76   | 23         | 1            | 10.5  | -82.0  | 82.7  | 7             |
| 43353        | 12          | Z   | 1000 | 10/ 76   | 17         | 7            | 7.1   | -87.9  | 88.2  | 7             |
| 43371        | 00          | Z   | 150  | 8/ 77    | 18         | 6            | 64.6  | -185.7 | 196.6 | 9             |
| 43371        | 12          | Z   | 50   | 8/ 77    | 15         | 0            | 173.0 | 99.9   | 199.7 | 9             |
| 72376        | 12          | Z   | 250  | 37/-108  | 23         | 0            | 78.7  | 47.3   | 91.8  | 5             |
| 96935        | 00          | Z   | 1000 | -7/ 113  | 9          | 1            | 27.4  | -79.1  | 83.7  | 9             |
| 97014        | 00          | Z   | 850  | 2/ 125   | 10         | 3            | 37.8  | 19.2   | 42.4  | 10            |



**Figure 8. TEMP 500 hPa geopotential mean daily count. NOVEMBER 2005**  
**All hours**  
**Global average number of observations in 24 hours = 1196**

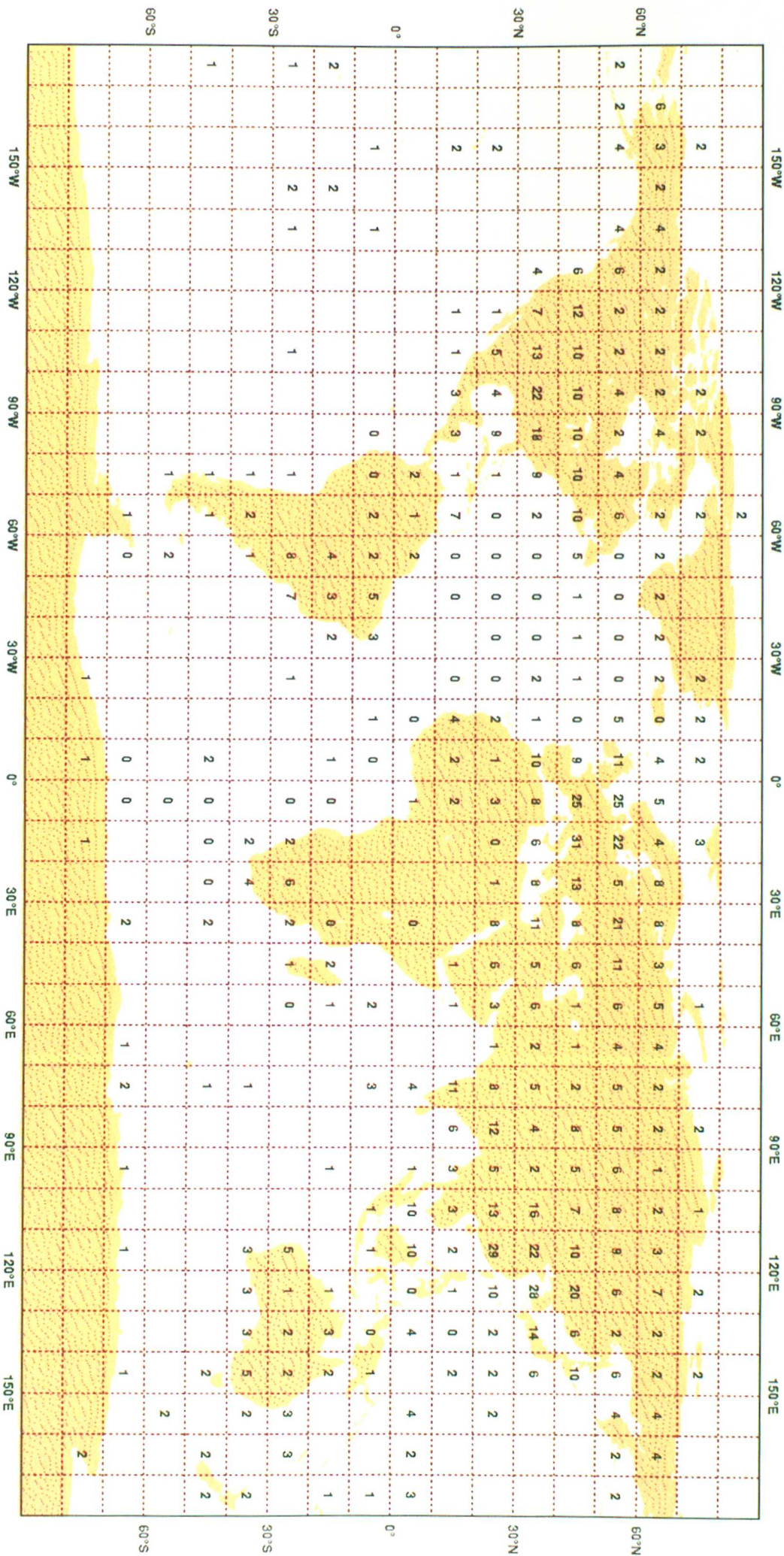


TABLE 6

**MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS**  
**MONITORING CENTRE: EXETER**  
**MONTH: Nov 2005**

**Monitoring procedures**

|                               |                                                                                                                                 |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>Period</b>                 | :One calendar month.                                                                                                            |
| <b>Data monitored</b>         | :Reports from each unique identifier for radiosonde TEMPs.                                                                      |
| <b>Area monitored</b>         | :90°N - 90°S, 180°W - 180°E.                                                                                                    |
| <b>Standard of comparison</b> | :Background field from UKMO global model.                                                                                       |
| <b>Observation times</b>      | :00 UTC and 12 UTC.                                                                                                             |
| <b>Level(s) monitored</b>     | :Standard levels between 1000.0 - 100.0 hPa                                                                                     |
| <b>Element monitored</b>      | :VECTOR WIND in $\text{m s}^{-1}$                                                                                               |
| <b>Parameters monitored</b>   |                                                                                                                                 |
| :NUM OBS                      | :Number of observations available at level shown during period.                                                                 |
| :NUM GROSS                    | :Number of gross errors at level shown during period.                                                                           |
| :% REJ                        | :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.         |
| :UBIAS,VBIAS                  | :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors. |
| :RMS                          | :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.           |
| :NUM LEVELS                   | :Number of levels satisfying selection criteria.                                                                                |
| <b>GROSS ERROR LIMITS</b>     | :Defined in Appendix I.2                                                                                                        |
| <b>SELECTION CRITERIA</b>     | : $\geq 10$ observations and $\geq 15 \text{ m s}^{-1}$ RMS vector wind.                                                        |
|                               | <b>ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN</b>                                                 |



| WMO<br>IDENT | OBS<br>TIME | ELM | LEV  | LAT/LONG | NUM<br>OBS | NUM<br>GROSS | %<br>REJ | UBIAS | VBIAS | RMS  | LEVELS |
|--------------|-------------|-----|------|----------|------------|--------------|----------|-------|-------|------|--------|
| 04339        | 00          | V   | 1000 | 70/ -22  | 14         | 0            | 100      | -11.5 | 2.7   | 16.2 | 2      |
| 07110        | 12          | V   | 200  | 48/ -4   | 28         | 1            | 7        | -4.2  | 1.2   | 18.1 | 1      |
| 40809        | 12          | V   | 250  | 33/ 59   | 11         | 0            | 100      | -9.7  | 2.9   | 18.1 | 2      |
| 41506        | 12          | V   | 400  | 36/ 72   | 10         | 0            | 100      | -15.0 | 3.4   | 18.2 | 1      |
| 41560        | 12          | V   | 400  | 34/ 70   | 11         | 0            | 100      | -13.7 | -3.1  | 18.9 | 1      |
| 41594        | 00          | V   | 200  | 32/ 73   | 10         | 0            | 100      | -24.8 | 2.1   | 27.6 | 3      |
| 42182        | 00          | V   | 250  | 29/ 77   | 22         | 0            | 100      | -3.9  | -15.2 | 22.6 | 4      |
| 42182        | 12          | V   | 100  | 29/ 77   | 27         | 0            | 100      | -11.6 | -5.6  | 17.3 | 3      |
| 42339        | 00          | V   | 150  | 26/ 73   | 10         | 0            | 10       | -12.7 | 0.6   | 19.4 | 2      |
| 42369        | 00          | V   | 100  | 27/ 81   | 13         | 1            | 100      | -15.9 | -4.5  | 17.9 | 3      |
| 42369        | 12          | V   | 100  | 27/ 81   | 22         | 0            | 100      | -16.2 | -2.5  | 18.4 | 3      |
| 42647        | 12          | V   | 100  | 23/ 73   | 15         | 0            | 100      | -11.5 | -3.0  | 15.5 | 1      |
| 42701        | 00          | V   | 150  | 23/ 85   | 13         | 0            | 100      | -18.2 | -1.0  | 19.3 | 3      |
| 42701        | 12          | V   | 200  | 23/ 85   | 17         | 0            | 100      | -14.5 | -2.1  | 16.1 | 1      |
| 42809        | 00          | V   | 100  | 23/ 88   | 14         | 0            | 92       | -4.7  | 4.1   | 17.0 | 1      |
| 42867        | 00          | V   | 150  | 21/ 79   | 13         | 0            | 7        | -10.5 | 1.8   | 25.0 | 1      |
| 54497        | 00          | V   | 150  | 40/ 124  | 26         | 0            | 34       | -11.4 | -0.3  | 20.5 | 4      |
| 54497        | 12          | V   | 150  | 40/ 124  | 28         | 0            | 53       | -18.2 | -0.2  | 23.8 | 2      |
| 57972        | 00          | V   | 150  | 26/ 113  | 28         | 0            | 3        | -1.2  | -0.8  | 15.3 | 1      |
| 60620        | 12          | V   | 300  | 28/ 0    | 10         | 0            | 100      | -13.4 | -4.0  | 20.9 | 2      |
| 61995        | 00          | V   | 150  | -20/ 57  | 12         | 0            | 100      | -2.1  | 13.2  | 16.9 | 2      |
| 61995        | 12          | V   | 150  | -20/ 57  | 17         | 0            | 100      | -1.9  | 10.5  | 15.6 | 1      |
| 62337        | 12          | V   | 200  | 31/ 34   | 26         | 1            | 100      | -10.2 | 3.7   | 19.5 | 4      |
| 62378        | 12          | V   | 150  | 30/ 31   | 25         | 0            | 100      | -8.7  | 4.7   | 26.0 | 1      |
| 72376        | 12          | V   | 250  | 37/-108  | 21         | 0            | 100      | -2.7  | 4.3   | 15.7 | 1      |
| 78866        | 12          | V   | 300  | 18/ -63  | 26         | 0            | 3        | -1.8  | 3.0   | 16.1 | 1      |
| 89009        | 00          | V   | 100  | -90/ 0   | 24         | 0            | 100      | 8.5   | -22.0 | 32.7 | 6      |
| 89009        | 12          | V   | 100  | -90/ 0   | 27         | 0            | 100      | 6.5   | -19.5 | 29.4 | 6      |
| 97014        | 00          | V   | 100  | 2/ 125   | 12         | 0            | 100      | 9.5   | 1.7   | 15.1 | 1      |





TABLE 7

**MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS**  
**MONITORING CENTRE: EXETER**  
**MONTH: Nov 2005**

**Monitoring procedures**

|                               |                                                                                                                          |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Period</b>                 | :One calendar month.                                                                                                     |
| <b>Data monitored</b>         | :Reports from each unique identifier for radiosonde TEMPs.                                                               |
| <b>Area monitored</b>         | :90°N - 90°S, 180°W - 180°E.                                                                                             |
| <b>Standard of comparison</b> | :Background field from UKMO global model.                                                                                |
| <b>Observation times</b>      | :00 UTC and 12 UTC.                                                                                                      |
| <b>Level(s) monitored</b>     | :Standard levels between 500.0 - 150.0 hPa                                                                               |
| <b>Element monitored</b>      | :WIND DIRECTION in degrees                                                                                               |
| <b>Parameters monitored</b>   |                                                                                                                          |
|                               | :NUM OBS :Average number of observations at all levels.                                                                  |
|                               | :BIAS :Mean difference of observations from background values from all levels.                                           |
|                               | :MAX SPREAD : (For observation - background values) Maximum absolute difference of SD at any level from SD at all levels |
|                               | :SD :SD of difference of observations from background values at all levels.                                              |
| <b>SELECTION CRITERIA</b>     | :NUM OBS $\geq 5$ , and<br>ABSOLUTE BIAS $\geq 10^\circ$ , with<br>SD $< 30^\circ$ , and<br>MAX SPREAD $< 10^\circ$      |

| WMO<br>IDENT | OBS<br>TIME | ELM | LAT/LONG | NUM<br>OBS | BIAS  | MAX<br>SPREAD | SD   |
|--------------|-------------|-----|----------|------------|-------|---------------|------|
| 08594        | 12          | DD  | 17/ -23  | 5          | 13.8  | 7.5           | 10.4 |
| 33791        | 12          | DD  | 48/ 33   | 23         | -12.6 | 3.8           | 10.1 |
| 34731        | 00          | DD  | 47/ 40   | 20         | 13.9  | 4.8           | 14.0 |
| 34731        | 12          | DD  | 47/ 40   | 22         | 15.0  | 3.8           | 15.1 |
| 42182        | 00          | DD  | 29/ 77   | 22         | 18.3  | 8.7           | 12.4 |
| 42182        | 12          | DD  | 29/ 77   | 28         | 17.8  | 2.6           | 5.7  |
| 48568        | 12          | DD  | 7/ 101   | 16         | 18.0  | 7.2           | 18.1 |
| 58968        | 00          | DD  | 25/ 122  | 26         | 18.1  | 3.1           | 6.7  |
| 58968        | 12          | DD  | 25/ 122  | 27         | 18.4  | 3.3           | 6.4  |
| 61995        | 00          | DD  | -20/ 57  | 15         | -33.4 | 6.2           | 22.4 |
| 61995        | 12          | DD  | -20/ 57  | 23         | -23.0 | 4.6           | 23.8 |
| 70231        | 12          | DD  | 63/-156  | 19         | -11.2 | 3.1           | 6.7  |
| 78397        | 12          | DD  | 18/ -77  | 14         | 10.3  | 4.8           | 18.4 |



## MONITORING OF SATELLITE WINDS

### MONITORING CENTRE: EXETER

MONTH: Nov 2005

#### Monitoring procedures

|                        |                                                                |
|------------------------|----------------------------------------------------------------|
| Period                 | :One calendar month.                                           |
| Data monitored         | :Reports from GOES-9, GOES-10, GOES-12, METEOSAT-5, METEOSAT-7 |
| Standard of comparison | :Background field from UKMO global model.                      |
| Selection Criteria     | :number of observations > 10.                                  |
| Data Extracted         | :Layer 701 - 1000 hPa<br>401 - 700 hPa<br>101 - 400 hPa        |
|                        | :Mean wind                                                     |
|                        | :Mean observation minus background vector wind differences     |
|                        | :Mean observation minus background speed differences           |
|                        | :RMS of observation minus background vector differences        |

Figure 10. SATOB 701 - 1000 hPa mean daily count. NOVEMBER 2005  
Global average number of observations in 24 hours = 93118

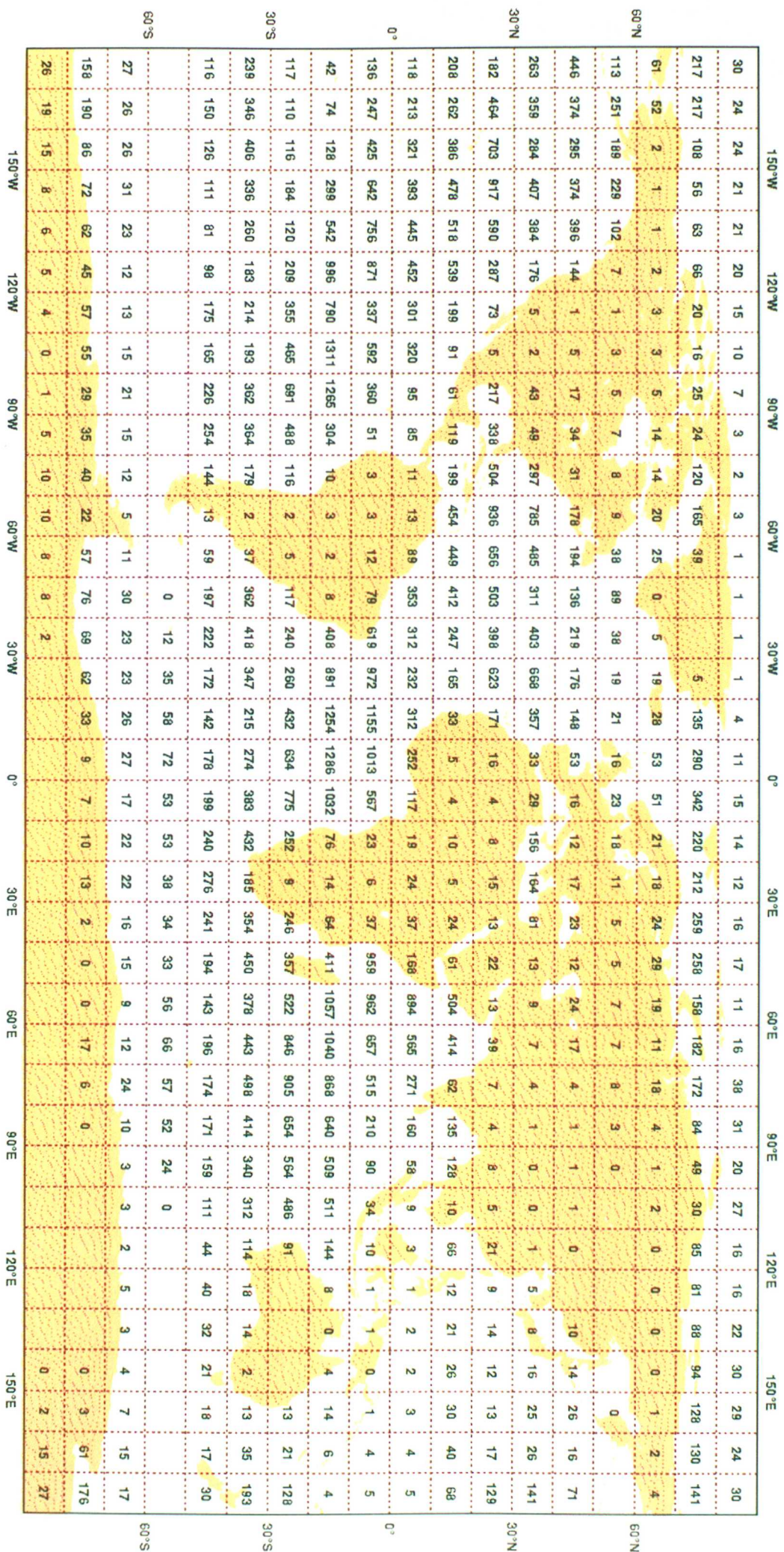




**Figure 11. SATOB 701 - 1000 hPa vector mean wind. OCTOBER 2004**  
**All observations**  
**Arrows are plotted where greater than 10 obs are present**

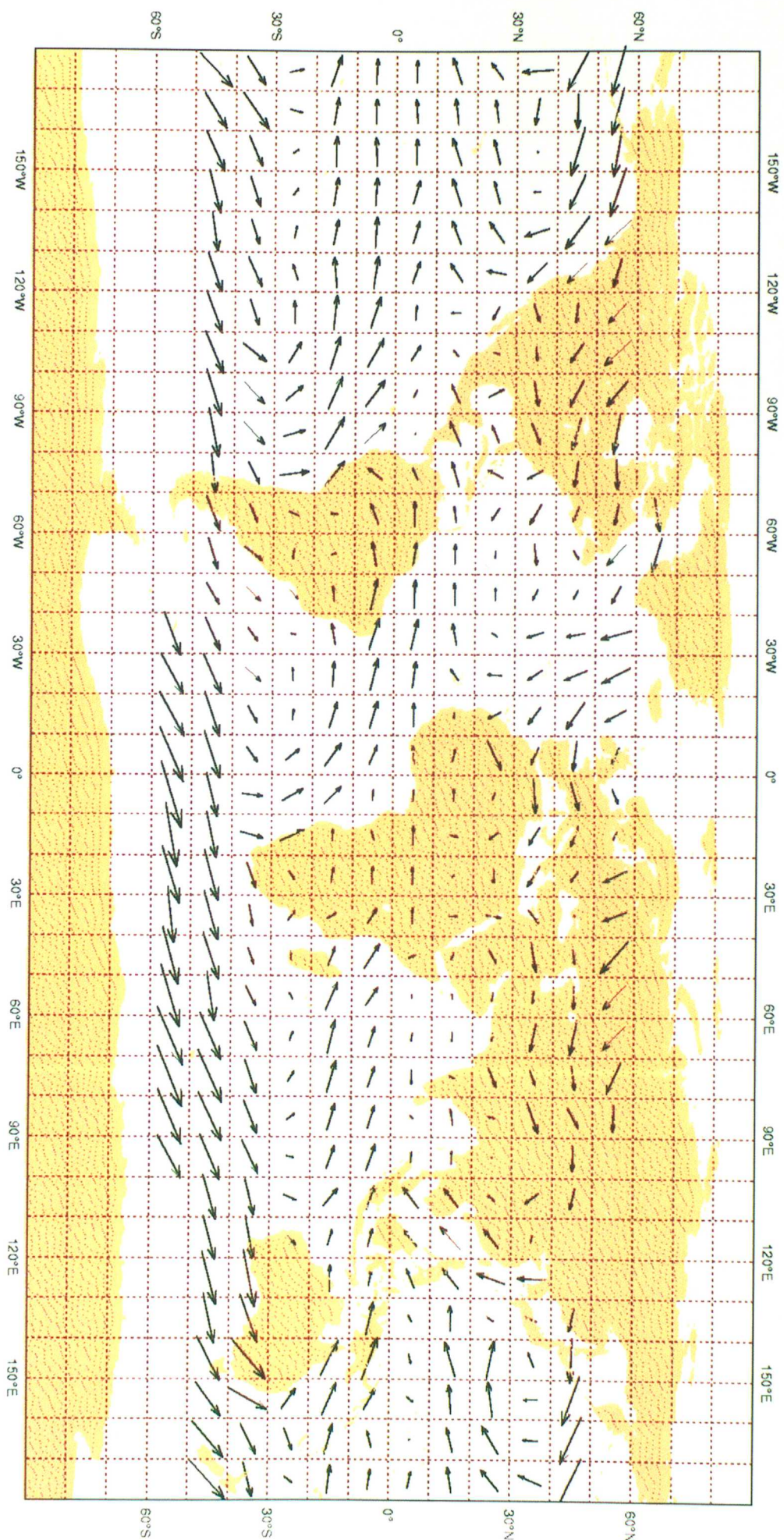




**Figure 12. SATOB 701 - 1000 hPa mean vector wind differences. OCTOBER 2004**  
**All observations**  
**Arrows are plotted where greater than 10 obs are present**

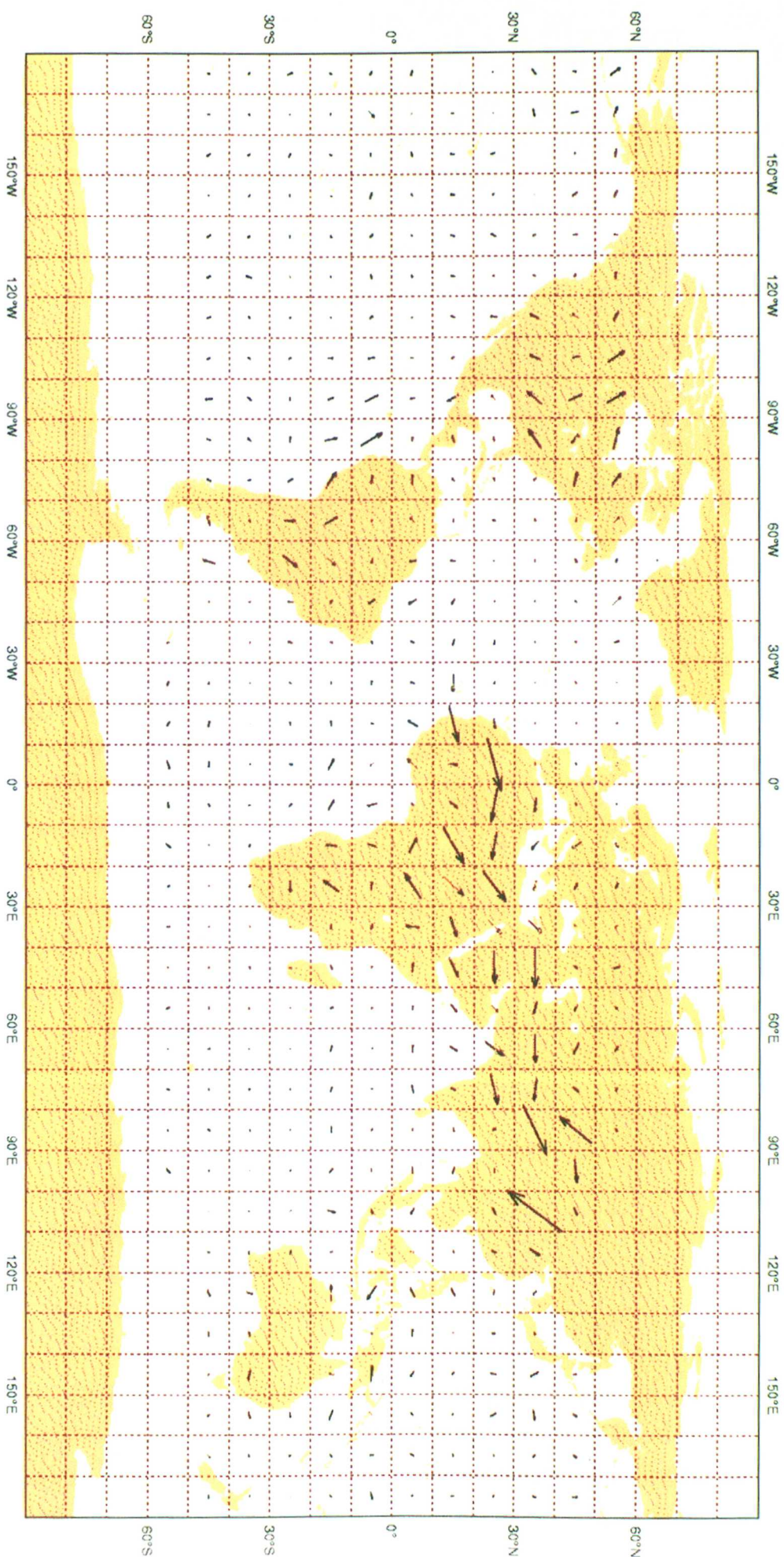




Figure 13. SATOB 701 - 1000 hPa mean O-B speed differences (ms-1). NOVEMBER 2005  
 All observations  
 Values are plotted where greater than 10 obs are present

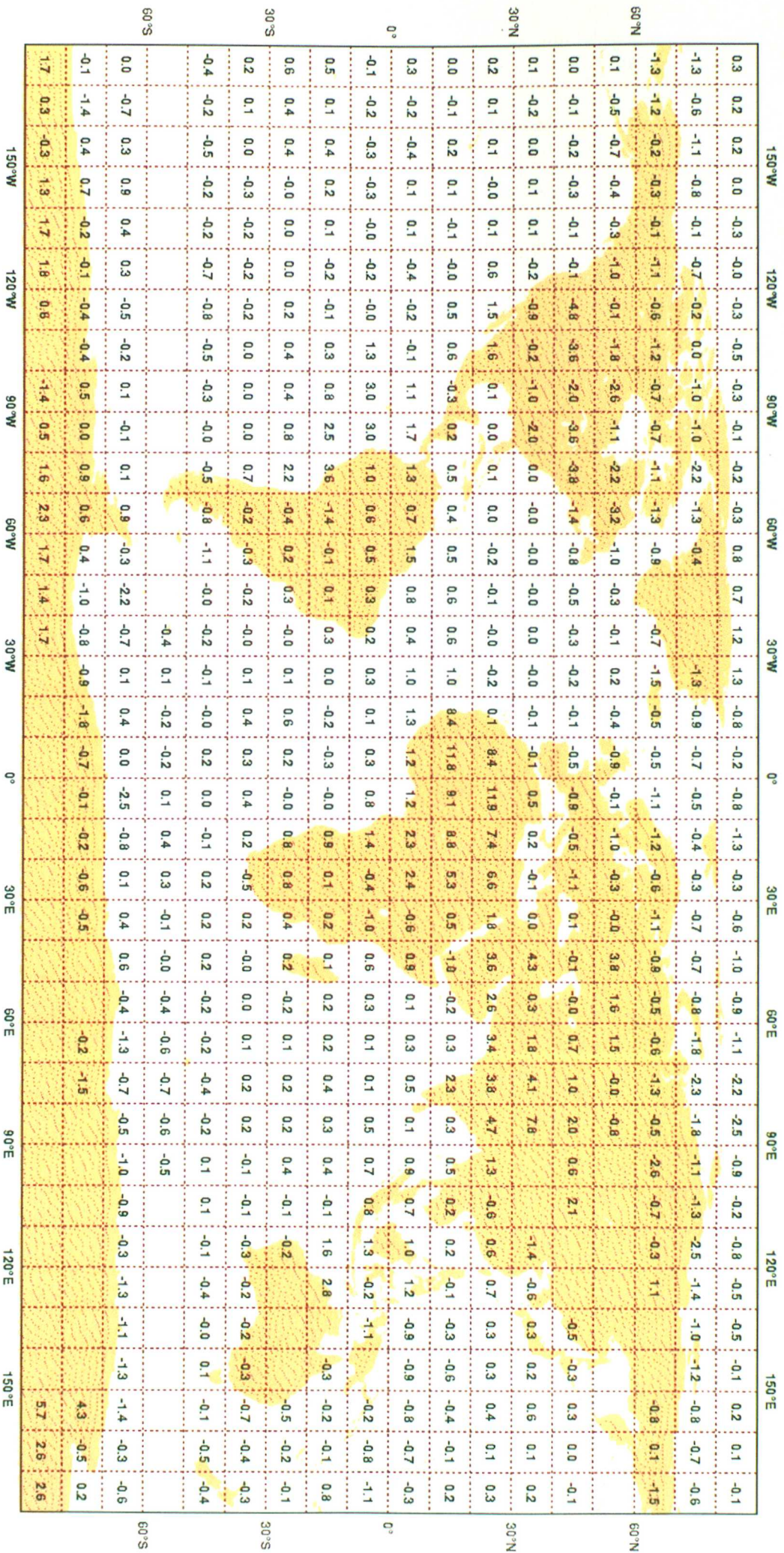




Figure 14. SATOB 701 - 1000 hPa mean RMS O-B vector differences (ms-1). NOVEMBER 2005  
 All observations  
 Values are plotted where greater than 10 obs are present

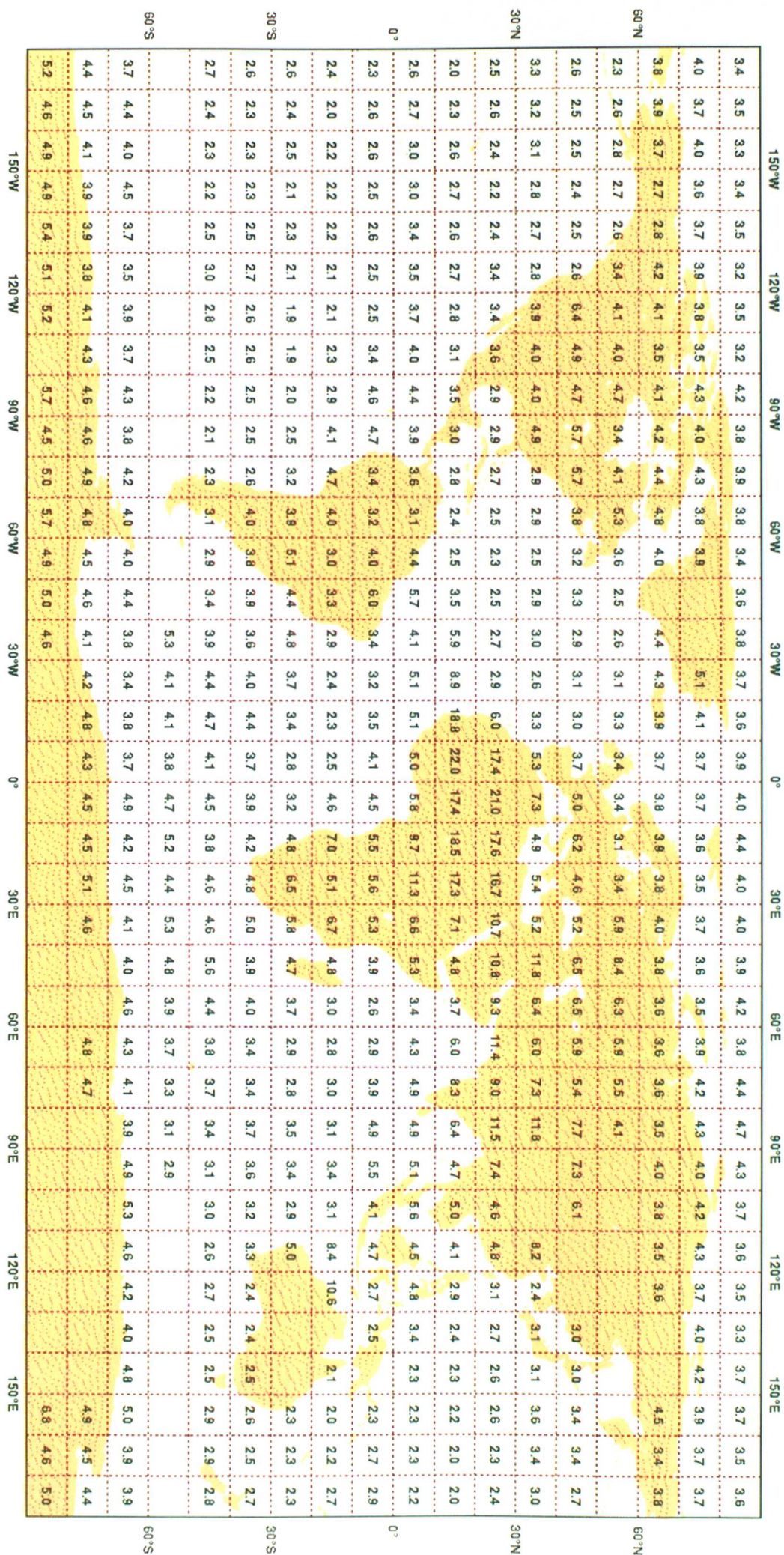




Figure 15. SATOB 401 - 700 hPa mean daily count. NOVEMBER 2005  
Global average number of observations in 24 hours = 88058

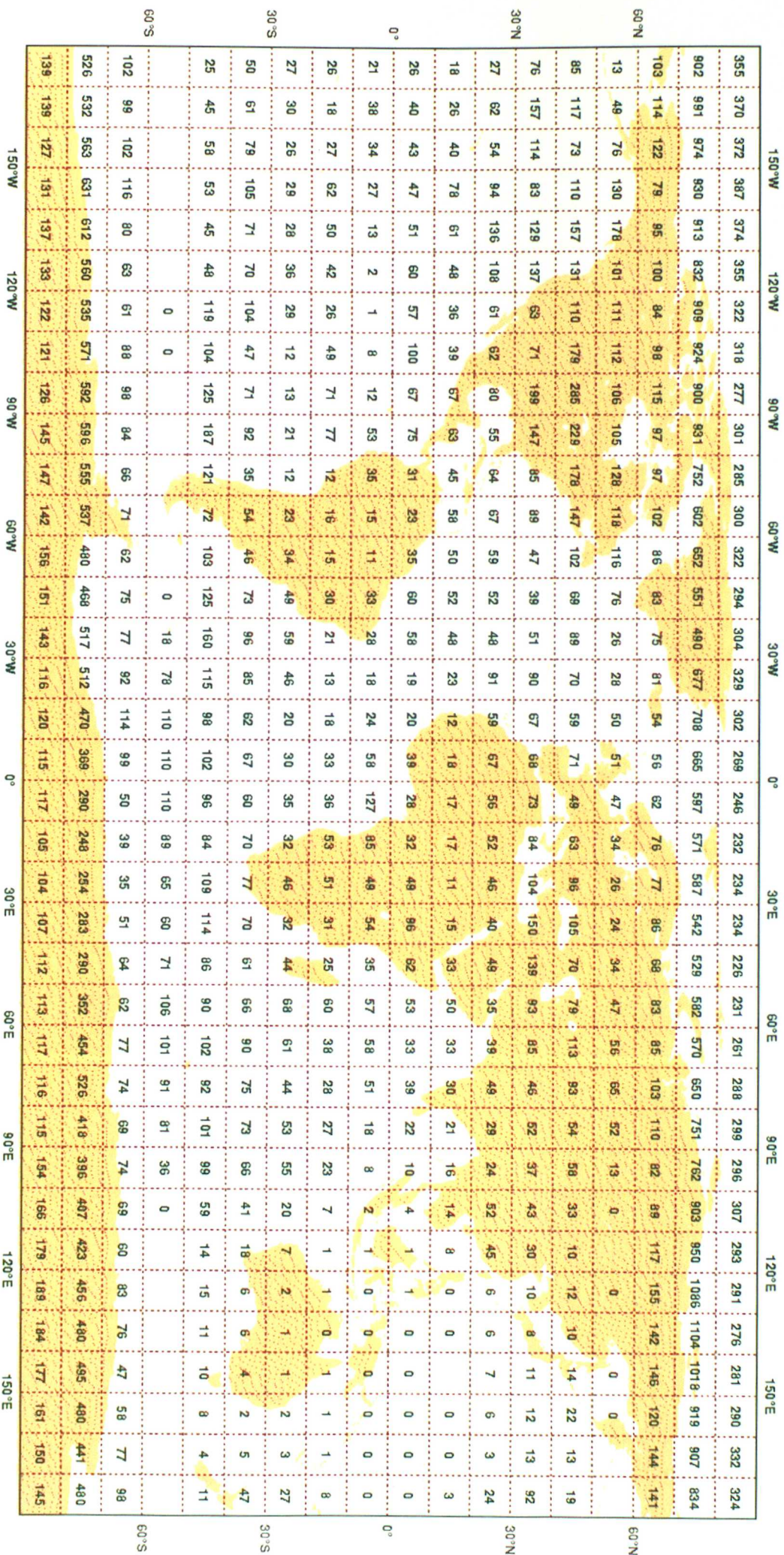




Figure 16. SATOB 401 - 700 hPa vector mean wind. OCTOBER 2004  
All observations  
Arrows are plotted where greater than 10 obs are present

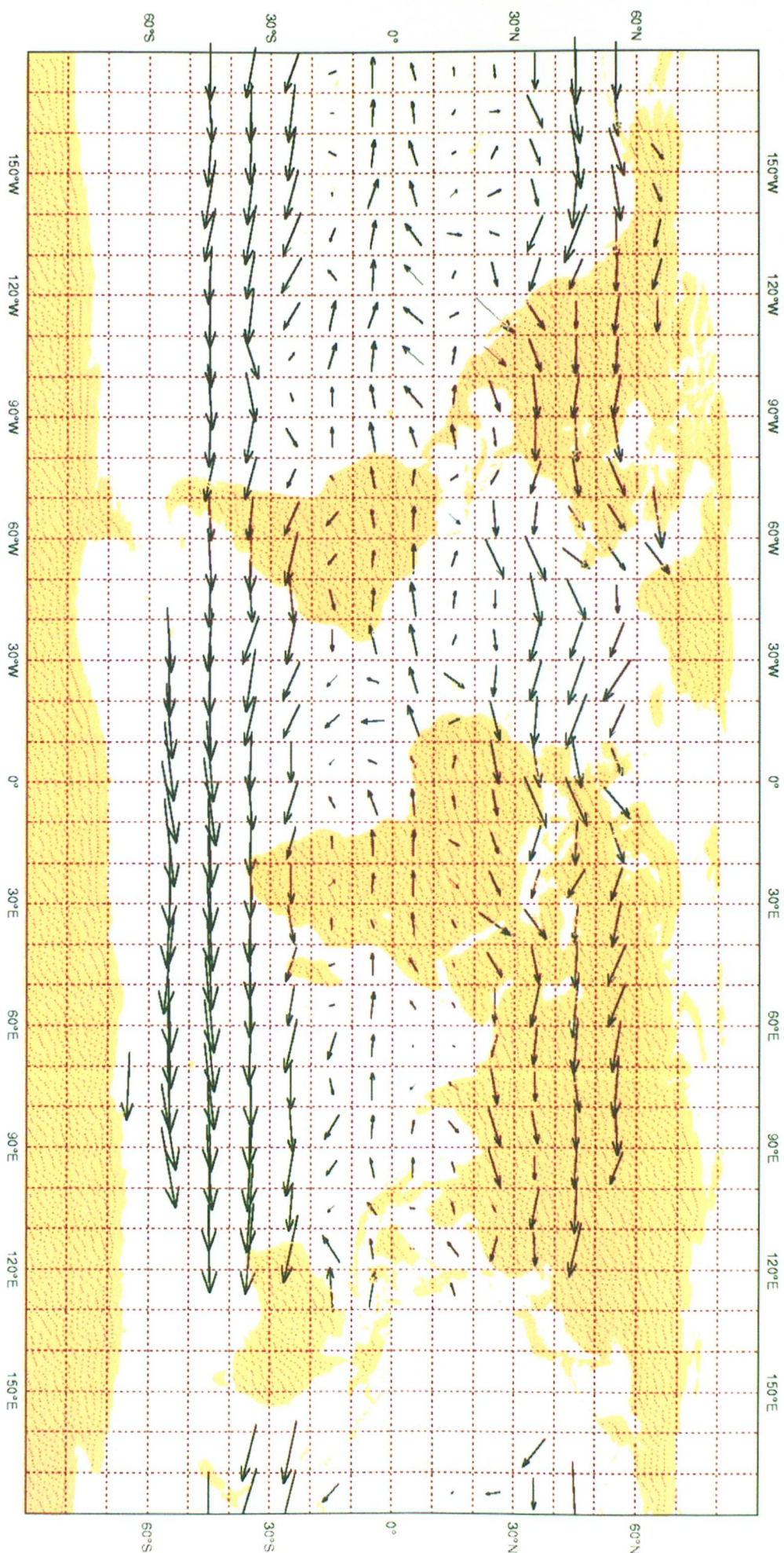




**Figure 17. SATOB 401 - 700 hPa mean vector wind differences. OCTOBER 2004**  
**All observations**  
**Arrows are plotted where greater than 10 obs are present**

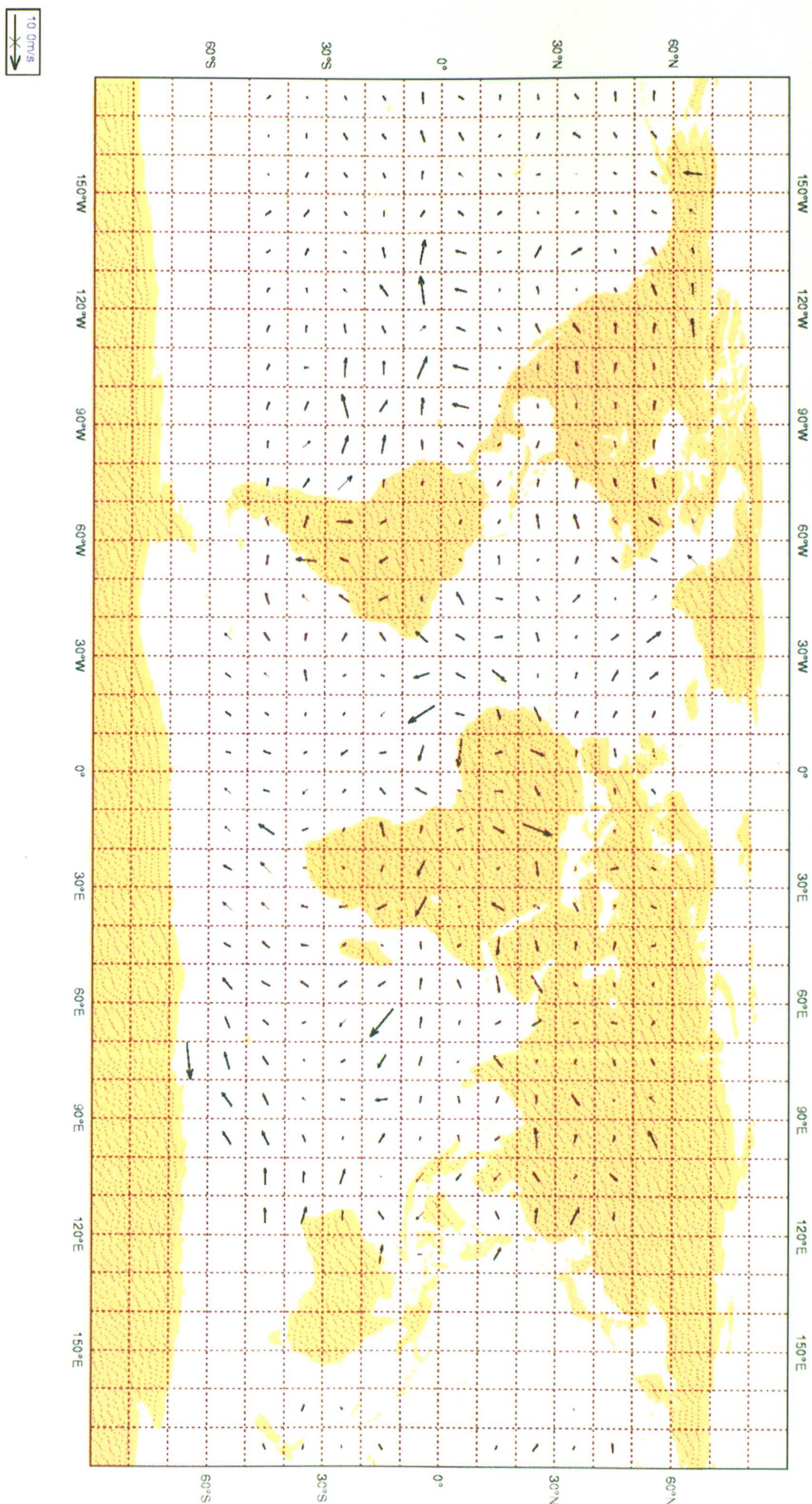




Figure 18. SATOB 401 - 700 hPa mean O-B speed differences (ms-1). NOVEMBER 2005  
 All observations  
 Values are plotted where greater than 10 obs are present

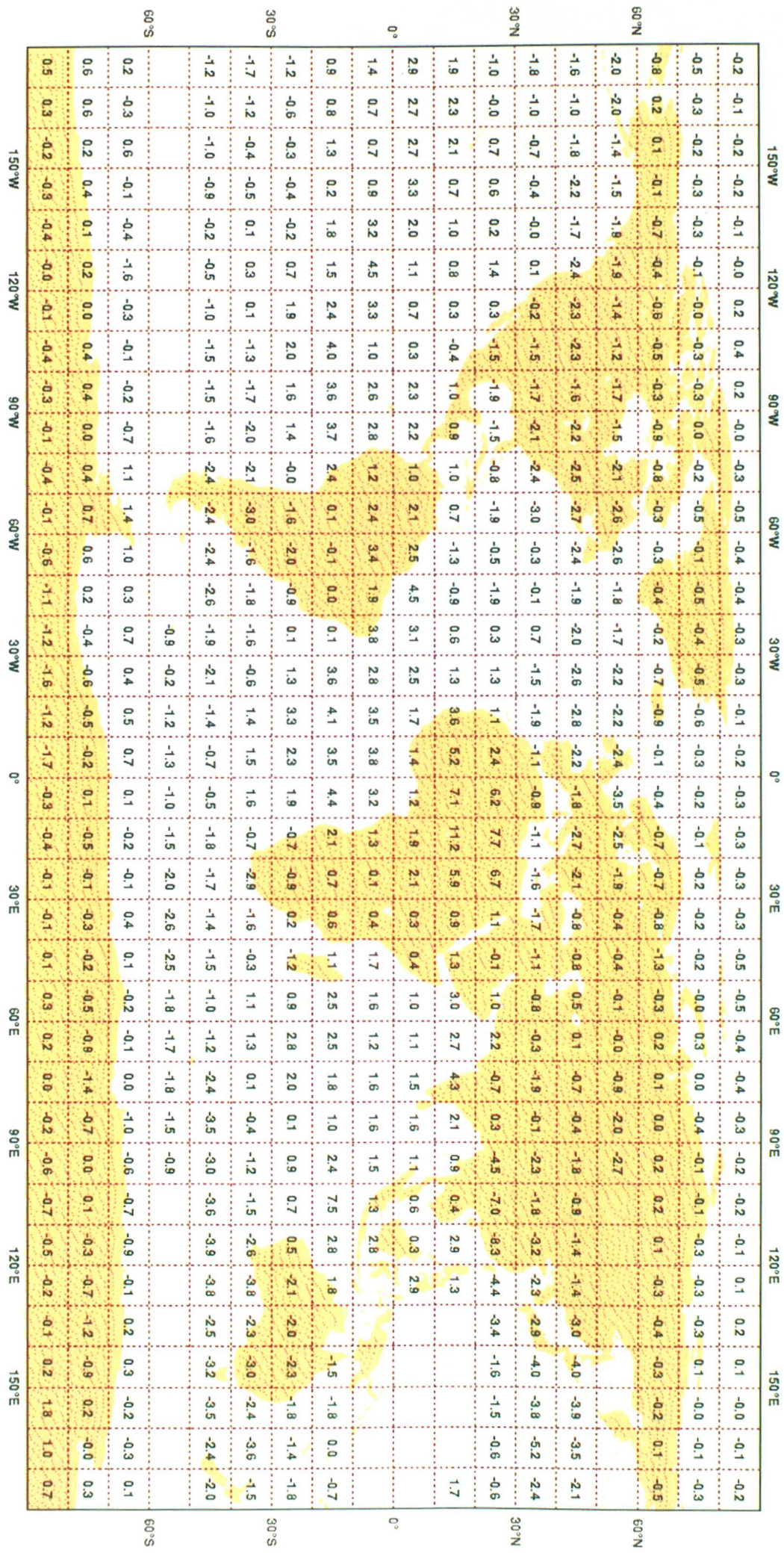








Figure 20. SATOB 101 - 400 hPa mean daily count. NOVEMBER 2005  
Global average number of observations in 24 hours = 240310

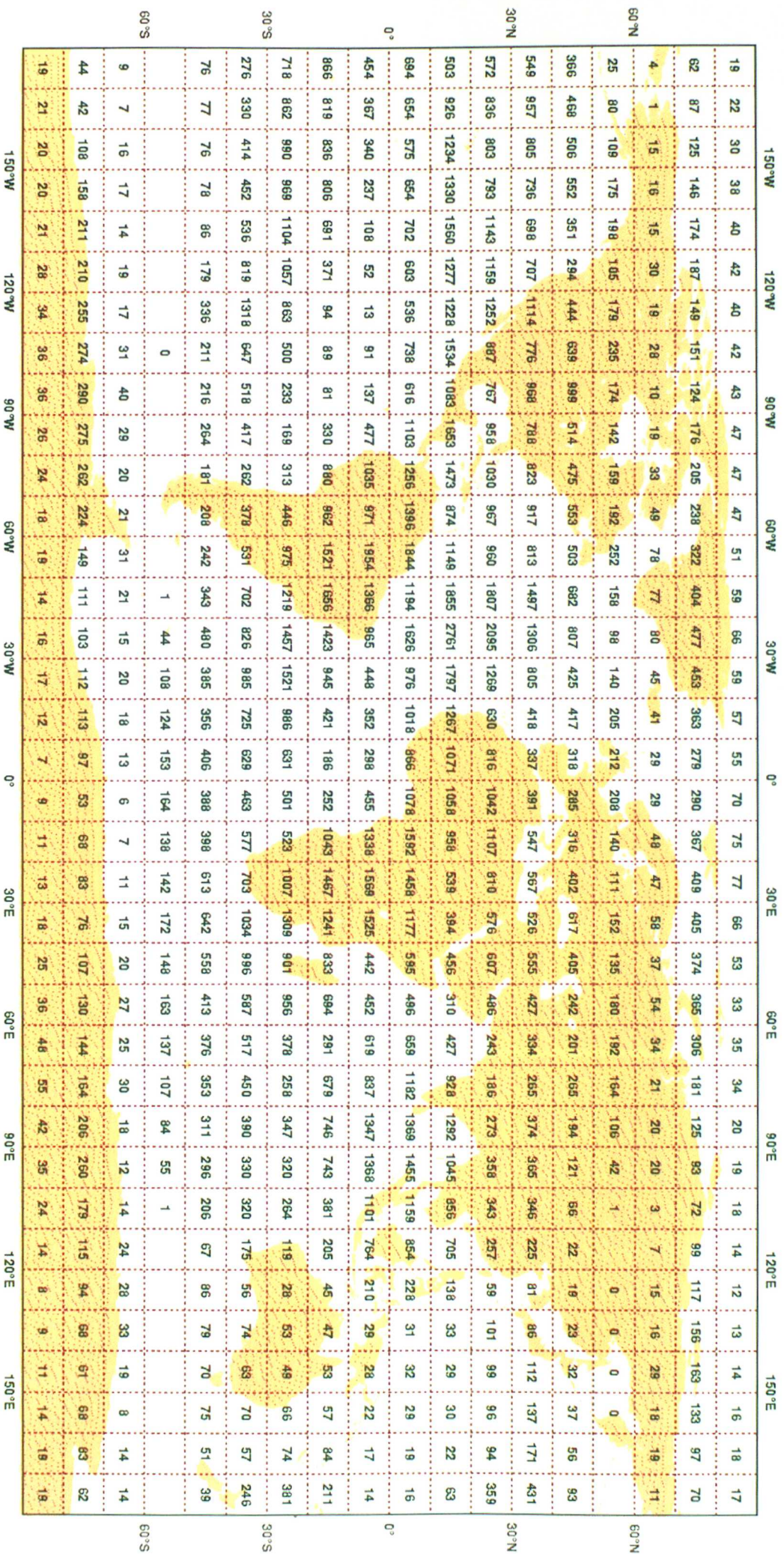




**Figure 21. SATOB 101 - 400 hPa vector mean wind. OCTOBER 2004**  
**All observations**  
**Arrows are plotted where greater than 10 obs are present**

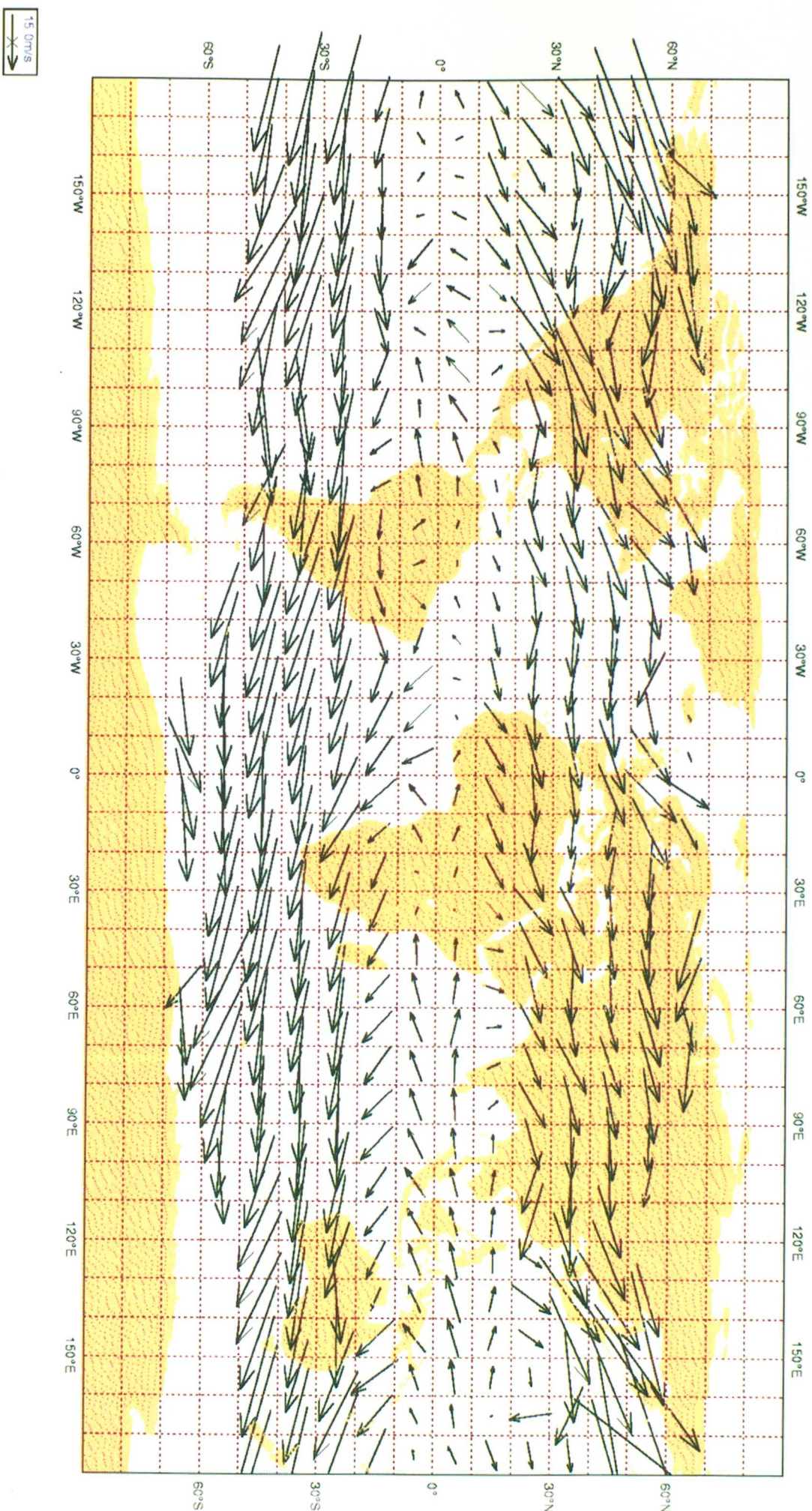




Figure 22. SATOB 101 - 400 hPa mean vector wind differences. OCTOBER 2004  
All observations  
Arrows are plotted where greater than 10 obs are present

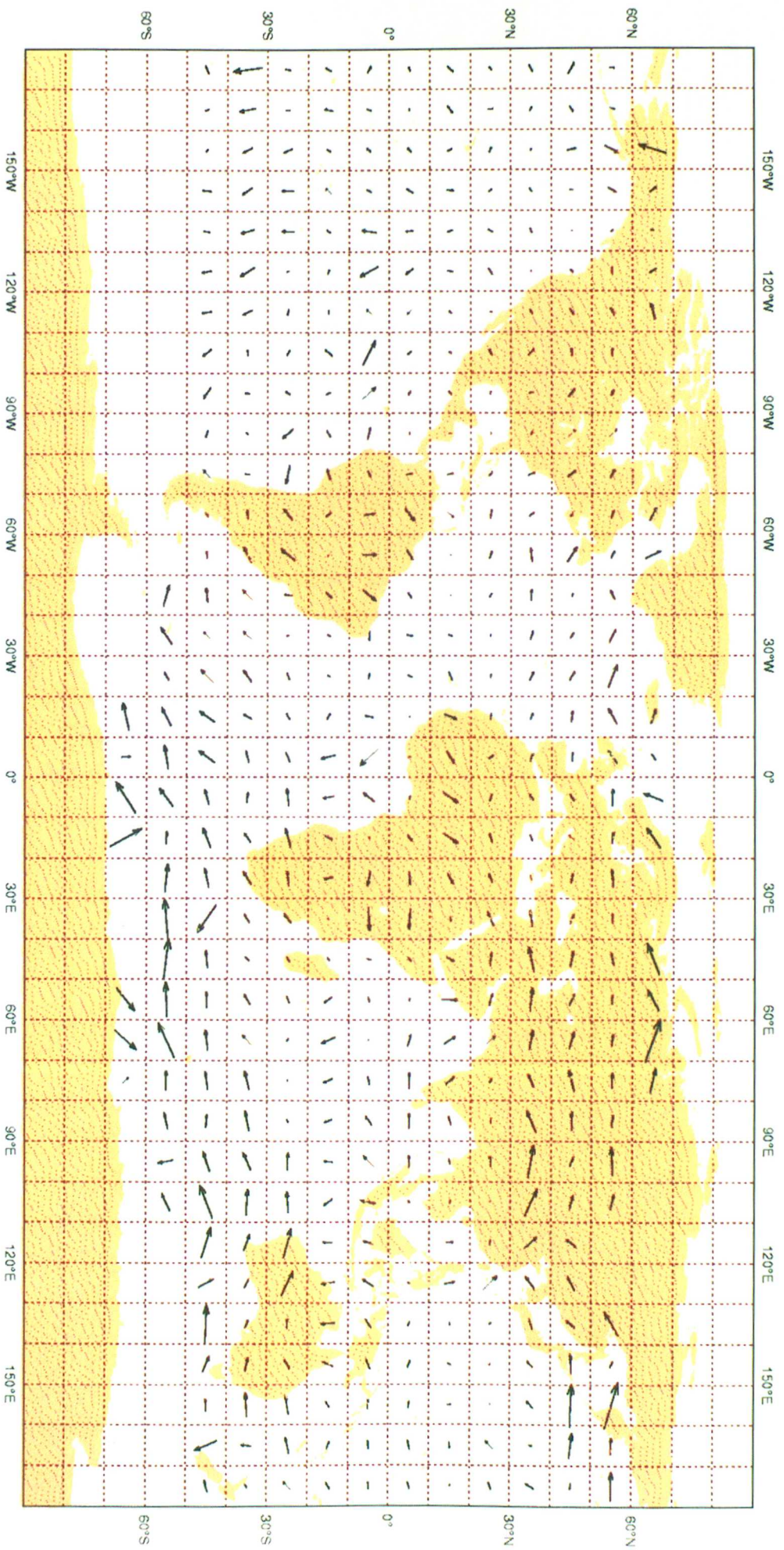




**Figure 23. SATOB 101 - 400 hPa mean O-B speed differences (ms-1). NOVEMBER 2005**  
**All observations**  
**Values are plotted where greater than 10 obs are present**

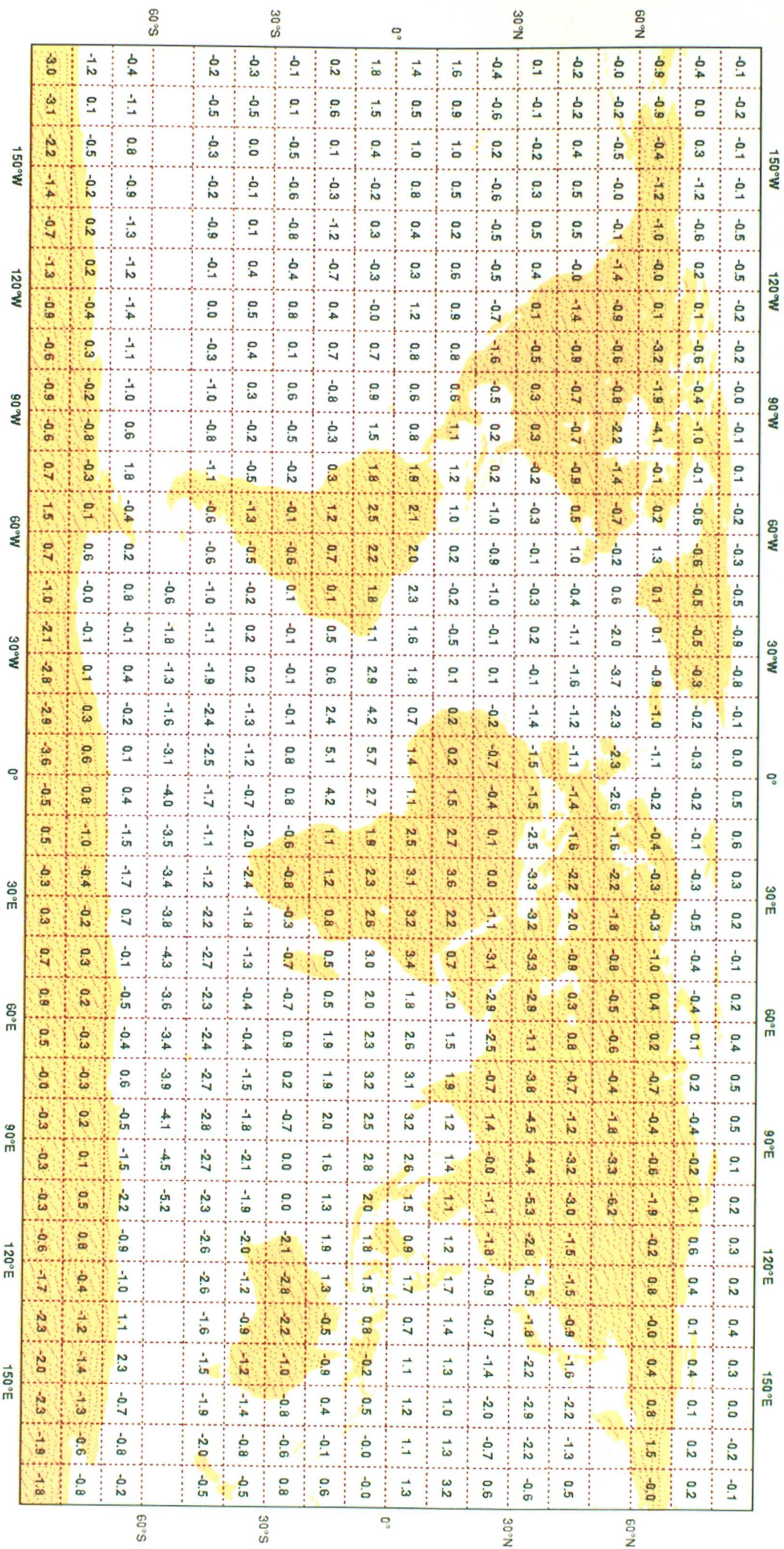
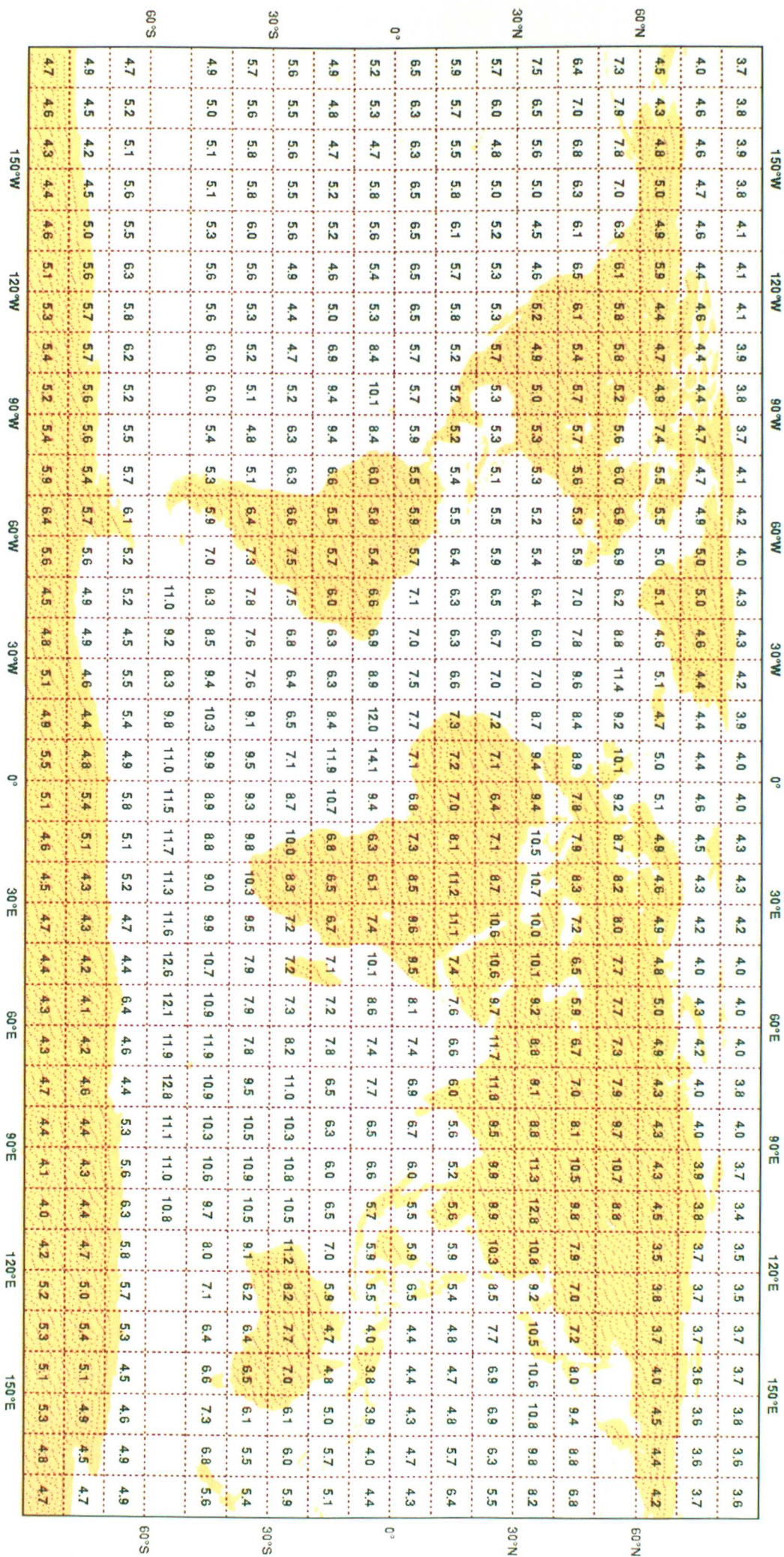




Figure 24. SATOB 101 - 400 hPa mean RMS O-B vector differences (ms<sup>-1</sup>). NOVEMBER 2005  
 All observations  
 Values are plotted where greater than 10 obs are present





## MONITORING OF SATELLITE TEMPERATURES

### MONITORING CENTRE: EXETER

MONTH: Nov 2005

#### Monitoring procedures

**Period** :One calendar month.

**Data monitored** :Reports from NOAA-15, NOAA-16 and NOAA-17.

**Standard of comparison** :Background field from UKMO global model.

**Selection Criteria** :All soundings.

**Data Extracted** :Sounding channels (and approximate weighting function peaks, hPa)

HIRS8 (Surface)  
HIRS15 (700)  
HIRS11 (500-700)  
HIRS4 (400)  
AMSUA5 (700)  
AMSUA7 (300)  
AMSUA9 (100)

:Mean and standard deviation observation-minus-background brightness temperature differences

**Figure 25. ATOVS mean daily count. NOVEMBER 2005**  
**NOAA15, using all observations**  
**Global average number of observations in 24 hours = 581425**

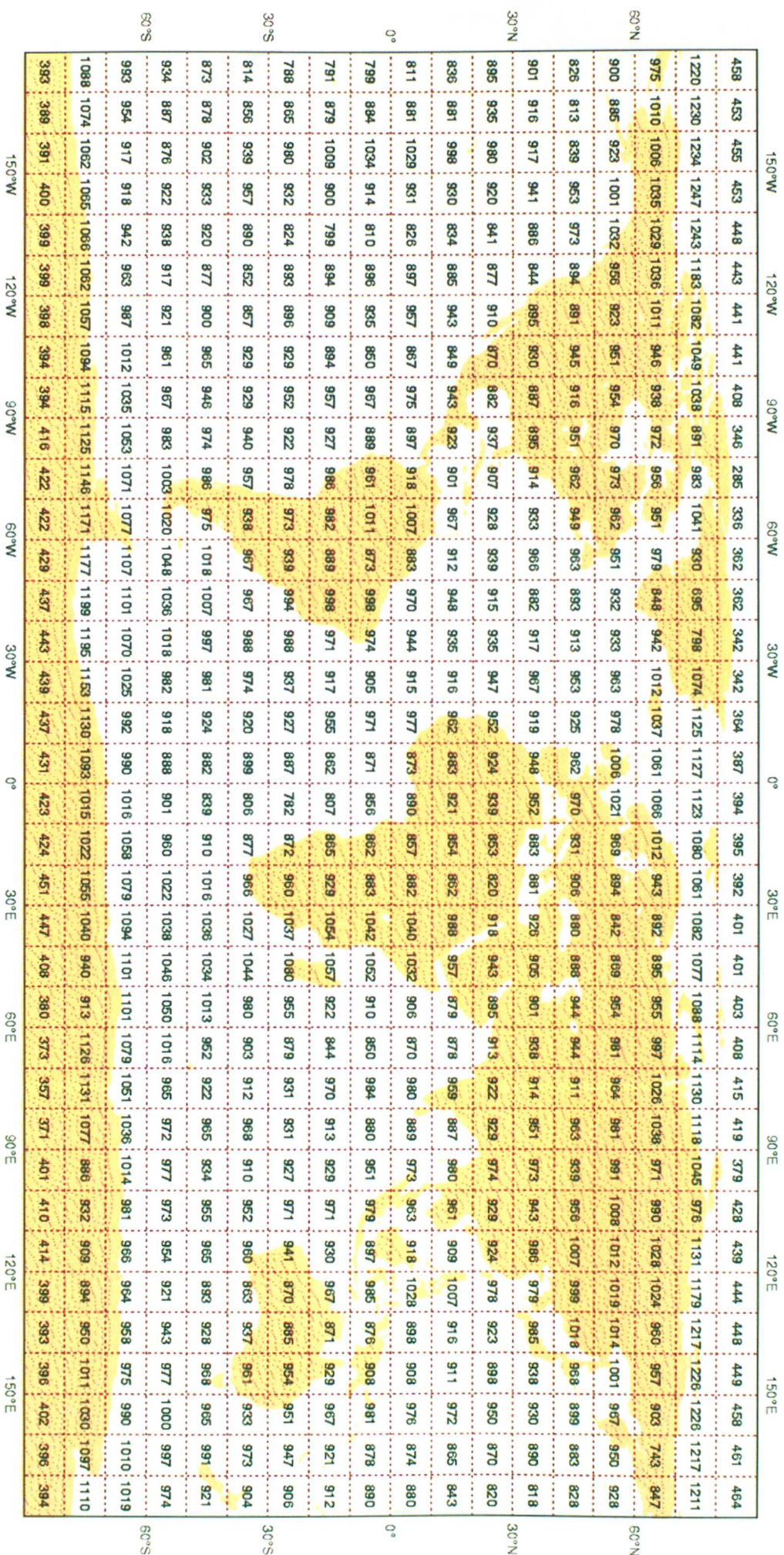




Figure 26. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS8 (Surface)  
NOAA15, using all observations

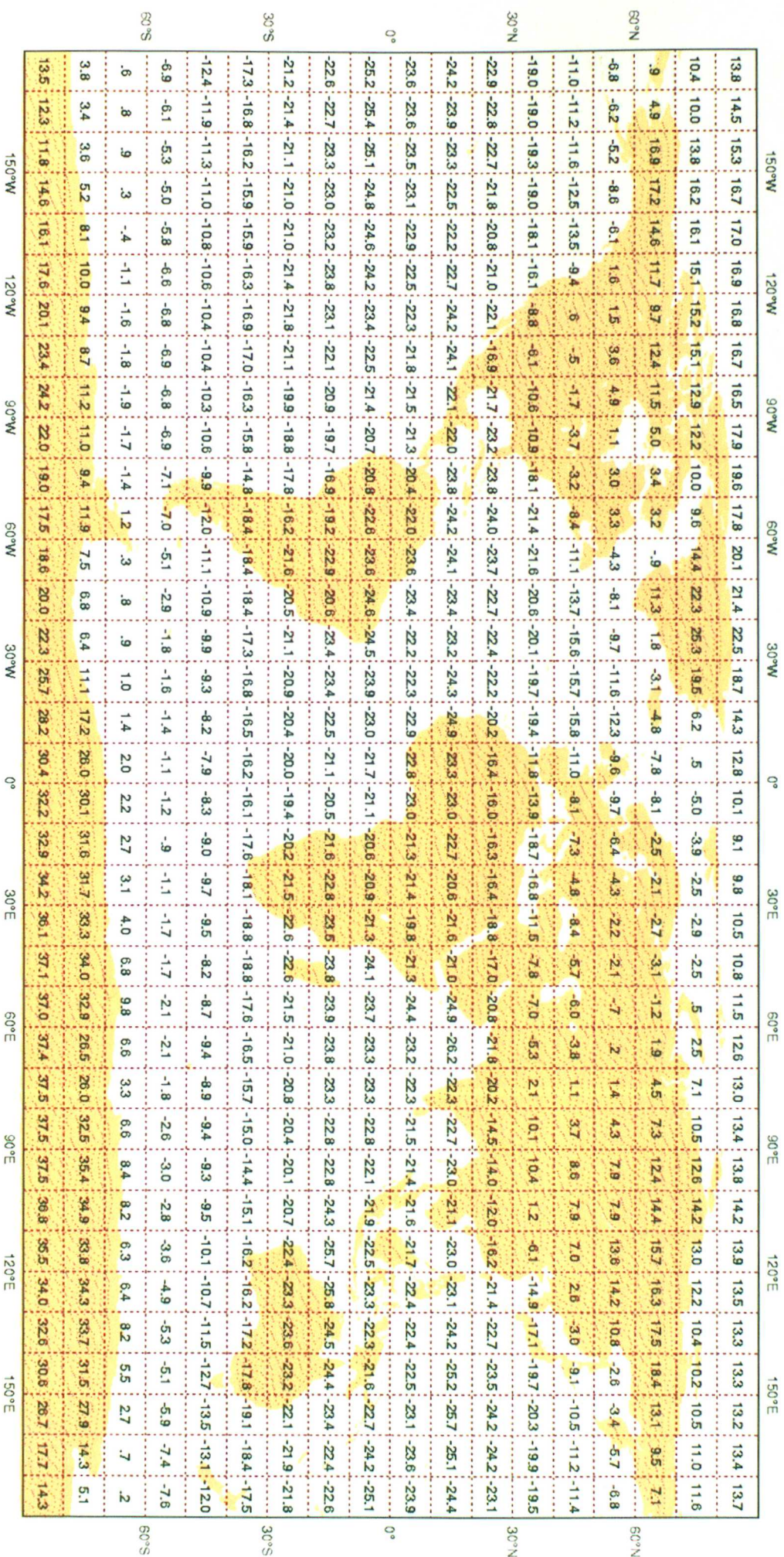




Figure 27. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS8 (Surface)  
NOAA15, using all observations

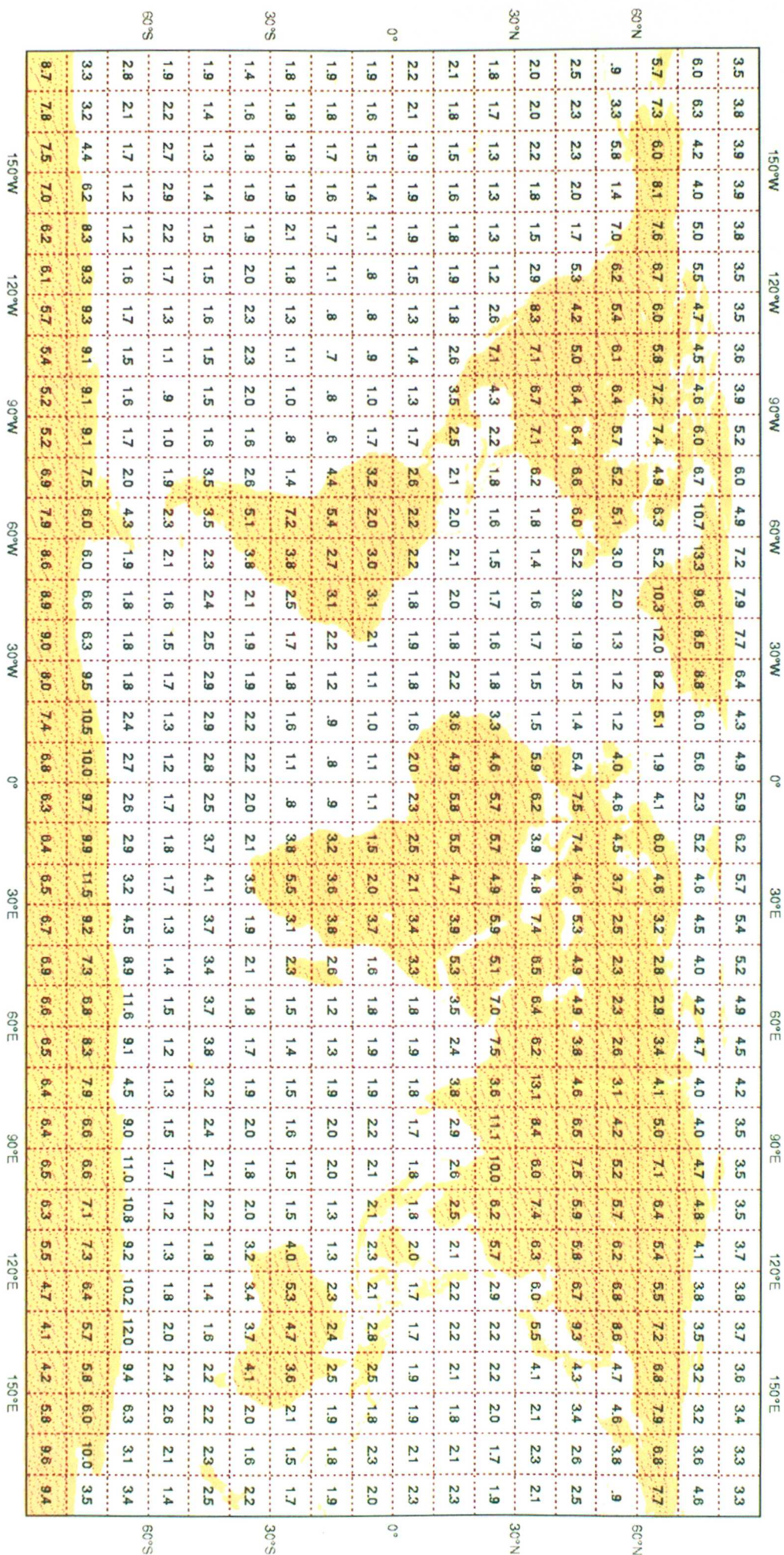








Figure 29. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS15 (700 hPa)  
NOAA15, using all observations

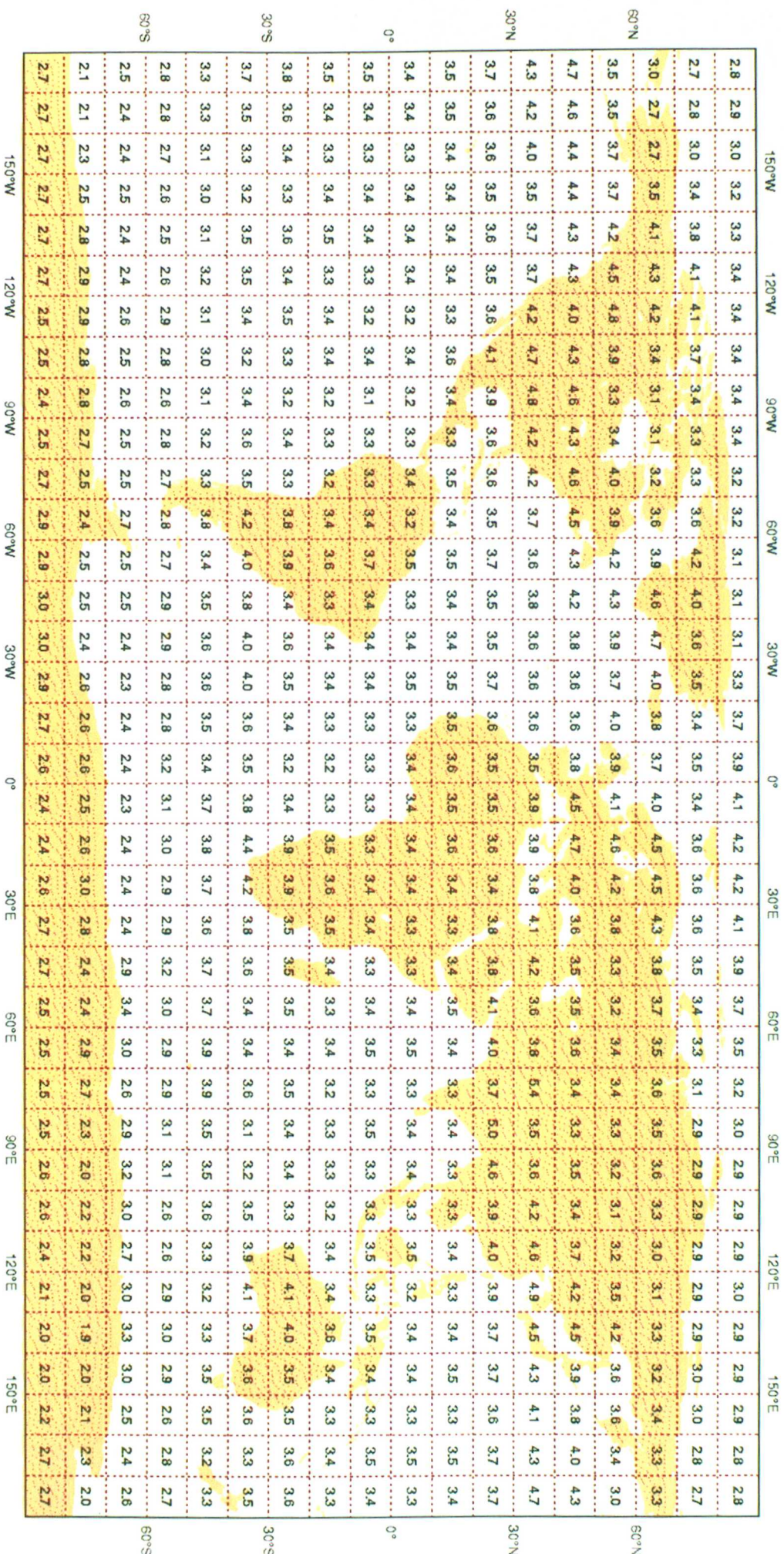




Figure 30. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS11 (500 - 700 hPa)  
NOAA15, using all observations

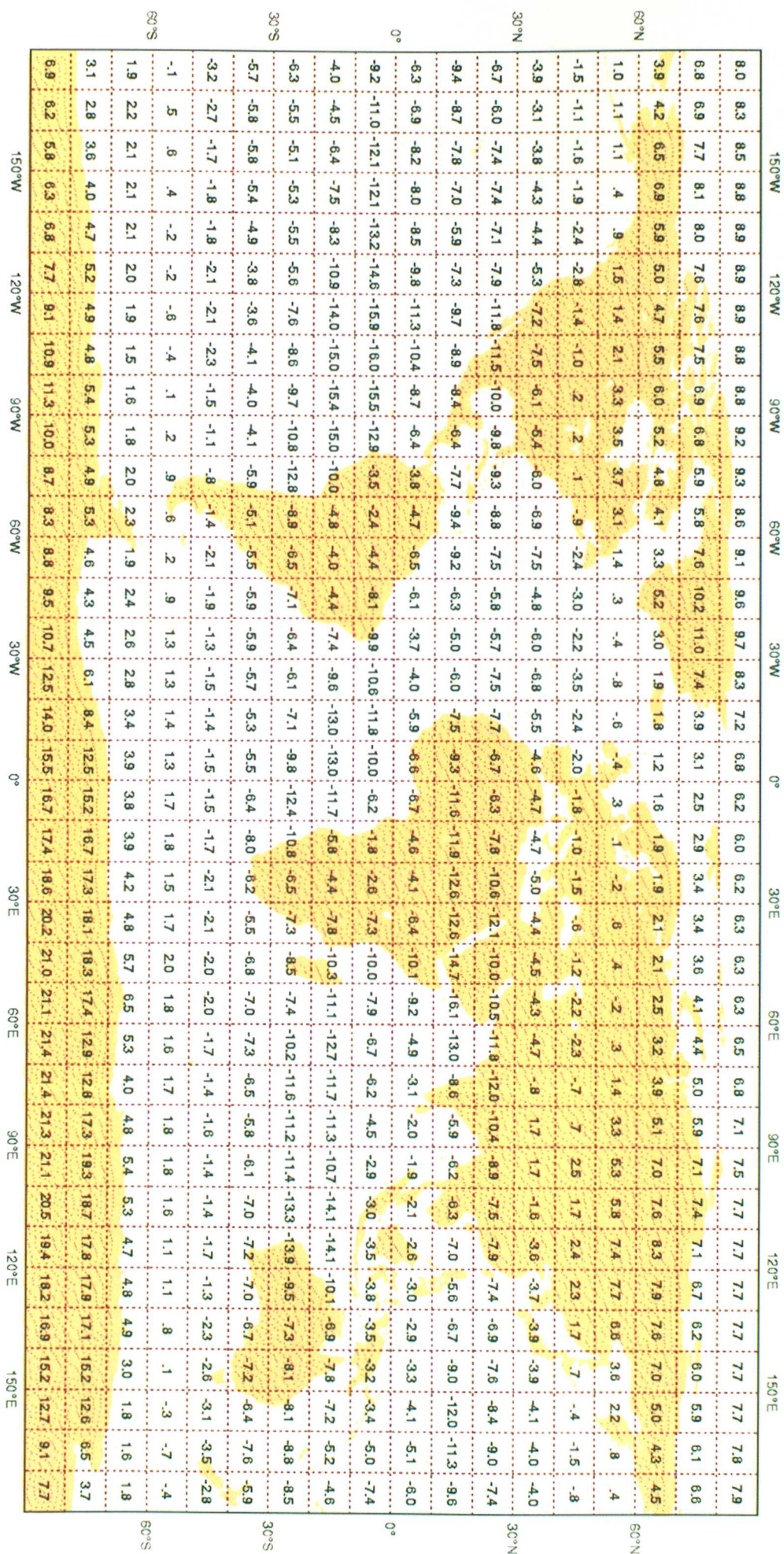




Figure 31. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS11 (500 - 700 hPa)  
NOAA15, using all observations

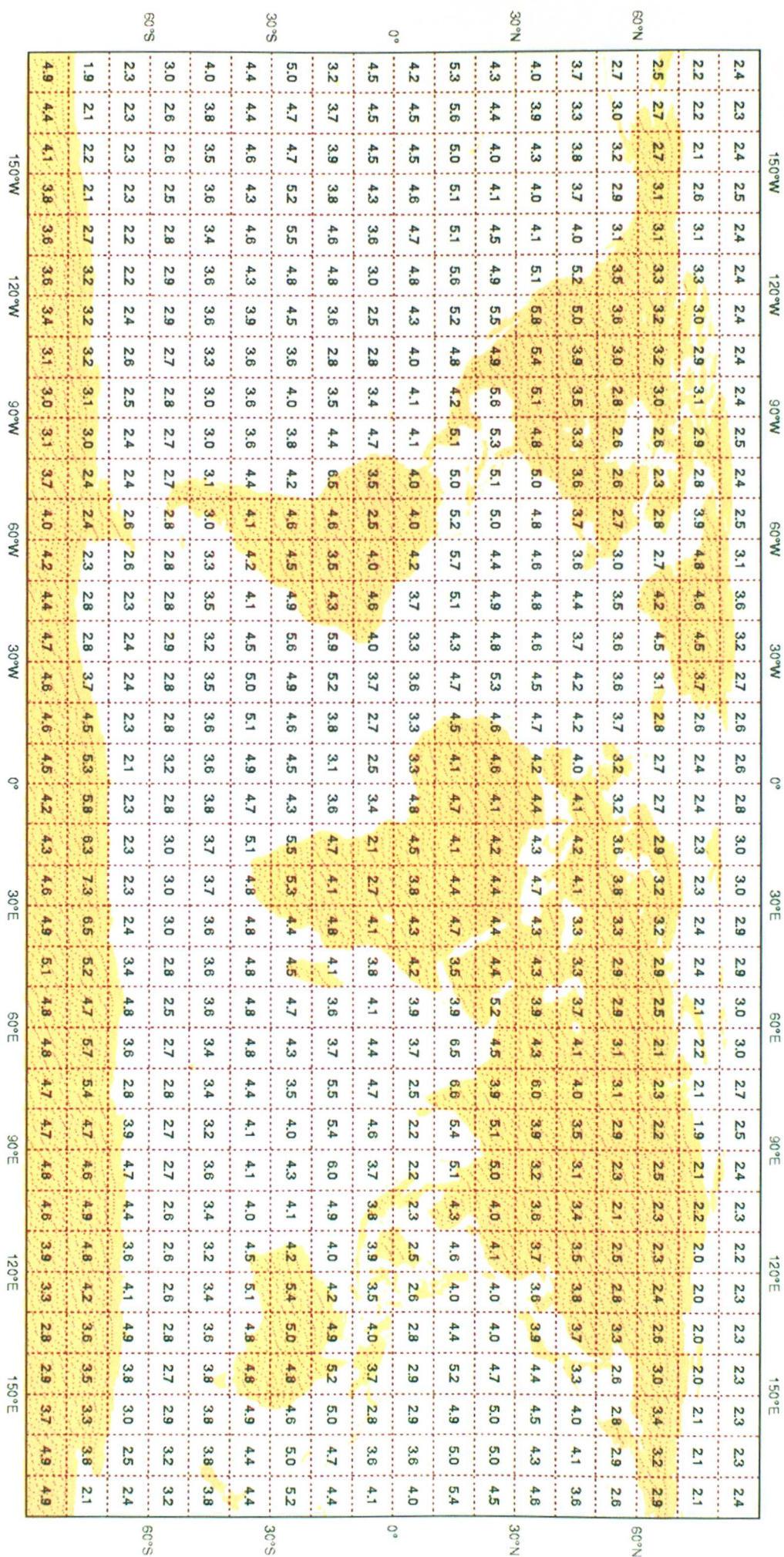




**Figure 32. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2005**  
**Channel: HIRS4 (400 hPa)**  
**NOAA15, using all observations**

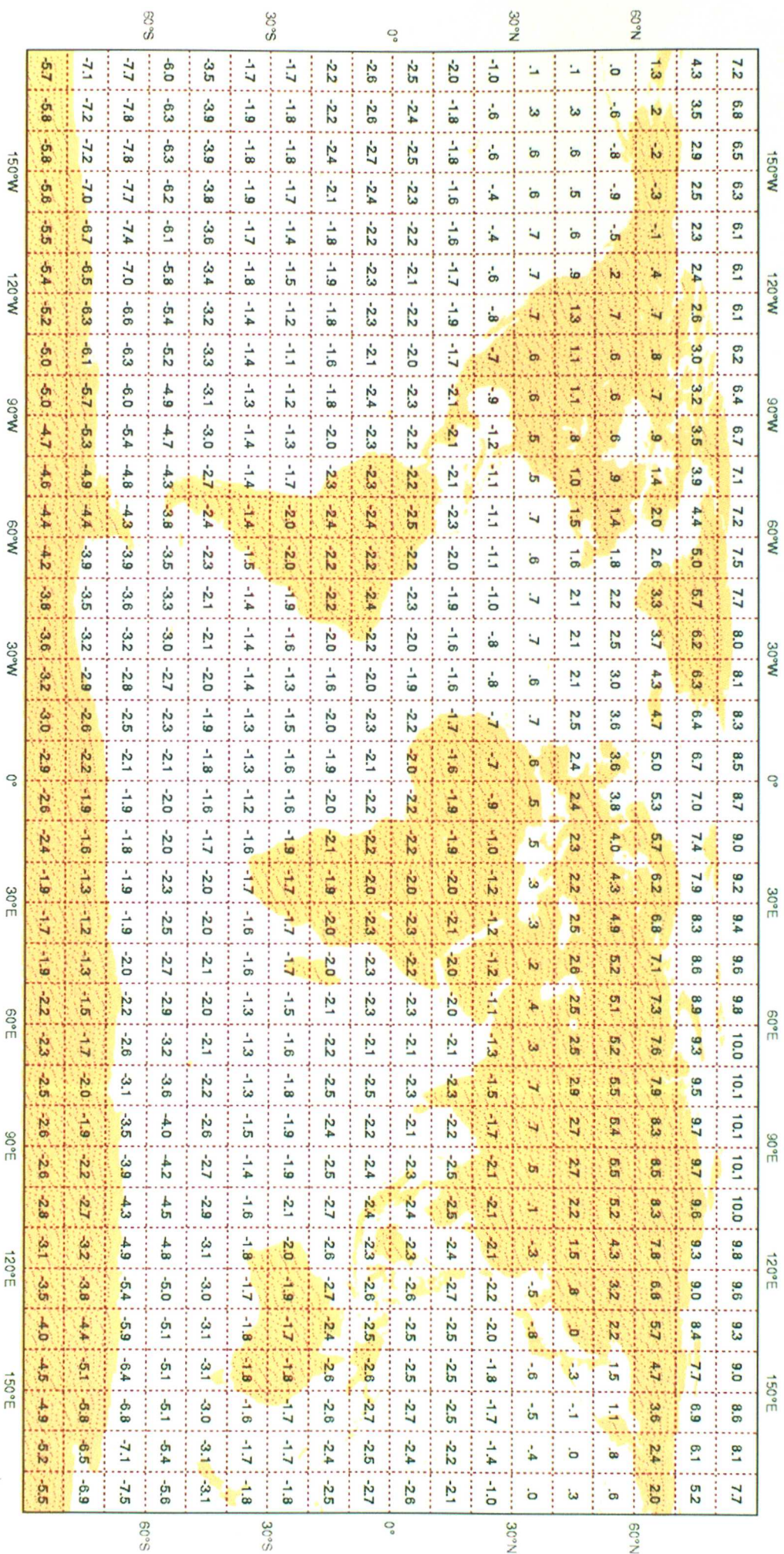




Figure 33. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS4 (400 hPa)  
NOAA15, using all observations

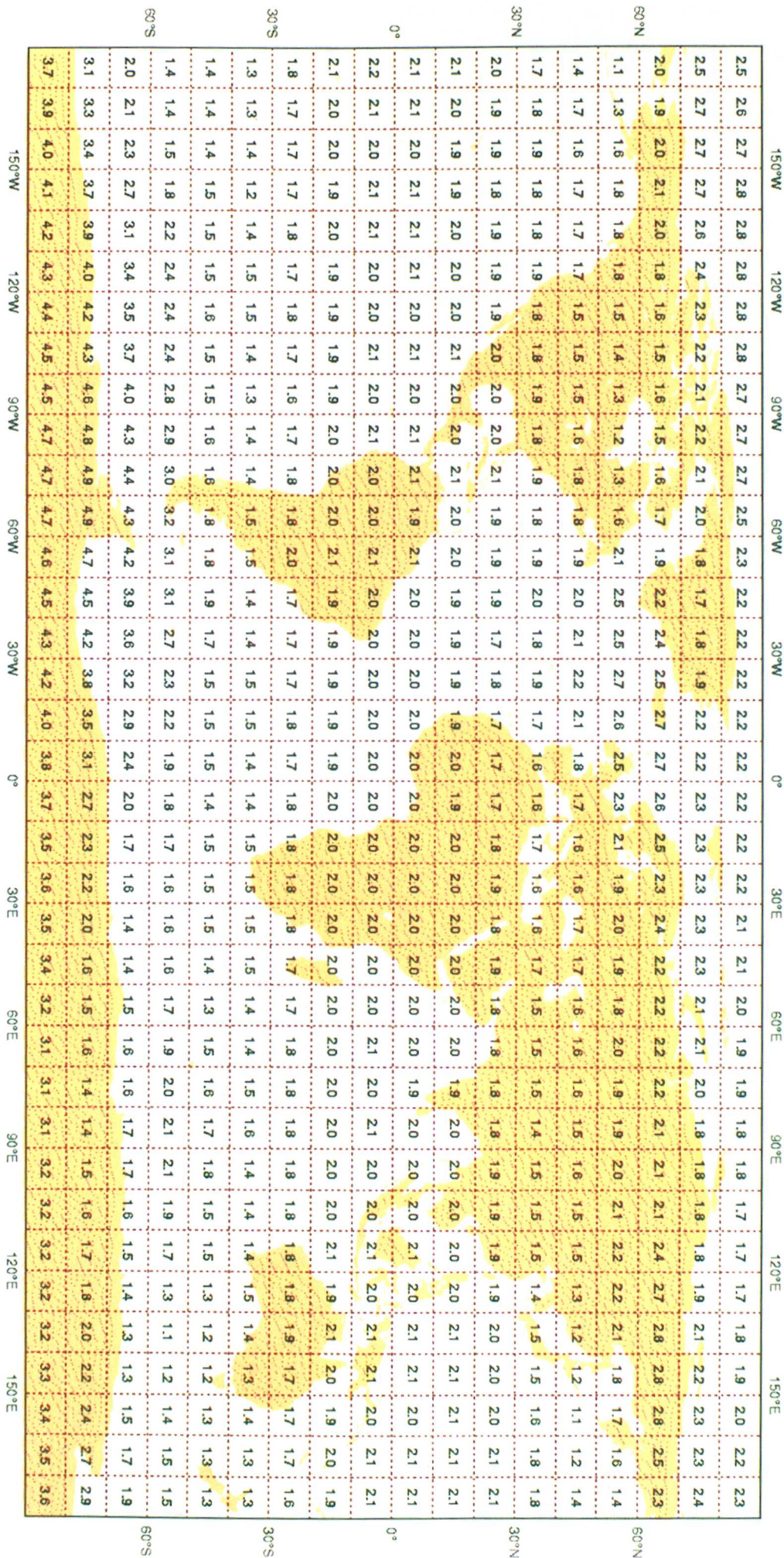








Figure 35. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: AMSUA-5 (700 hPa)  
NOAA15, using all observations

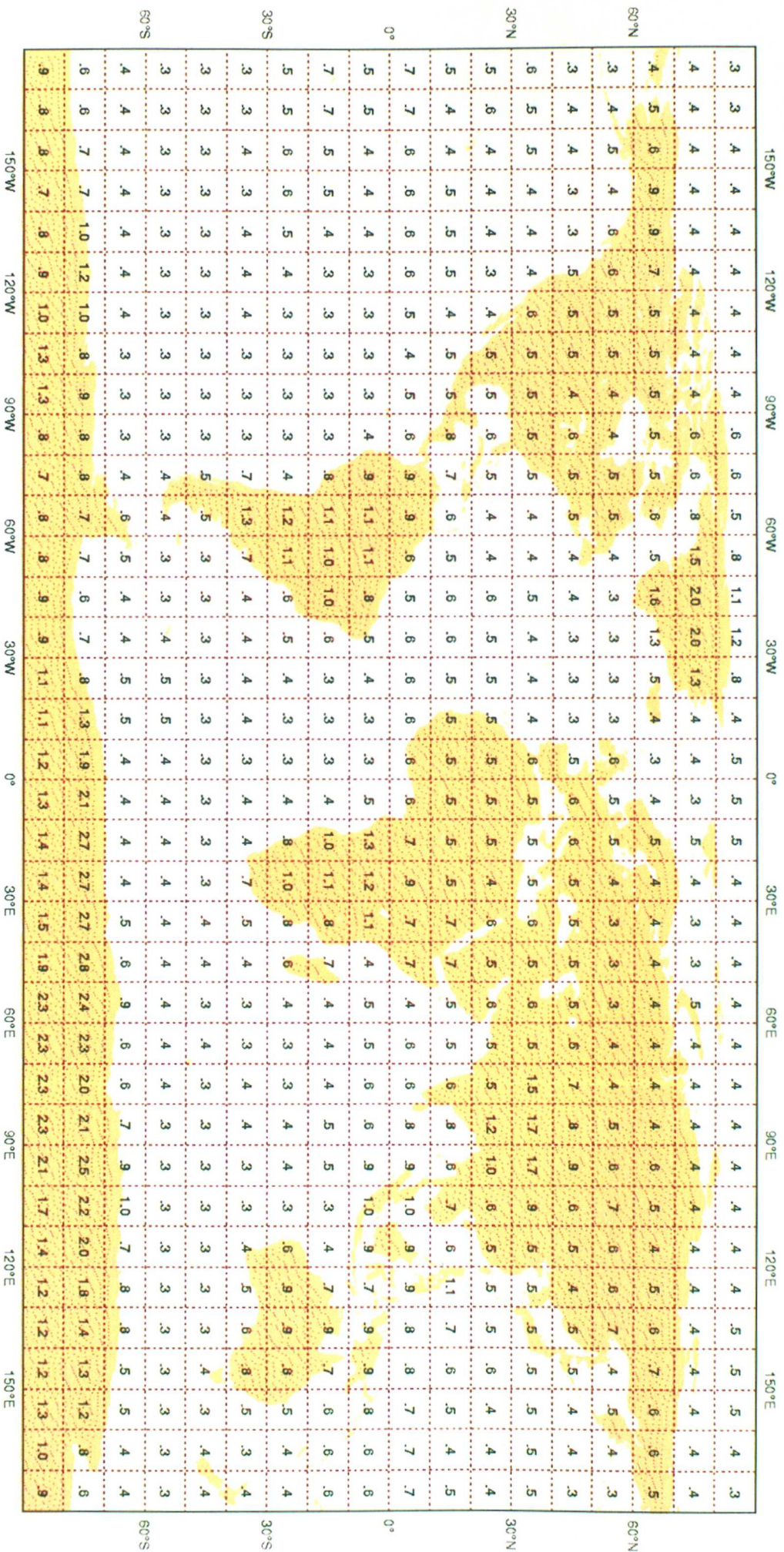




















**Figure 40. ATOVS mean daily count. NOVEMBER 2005**  
**NOAA16, using all observations**  
**Global average number of observations in 24 hours = 527361**

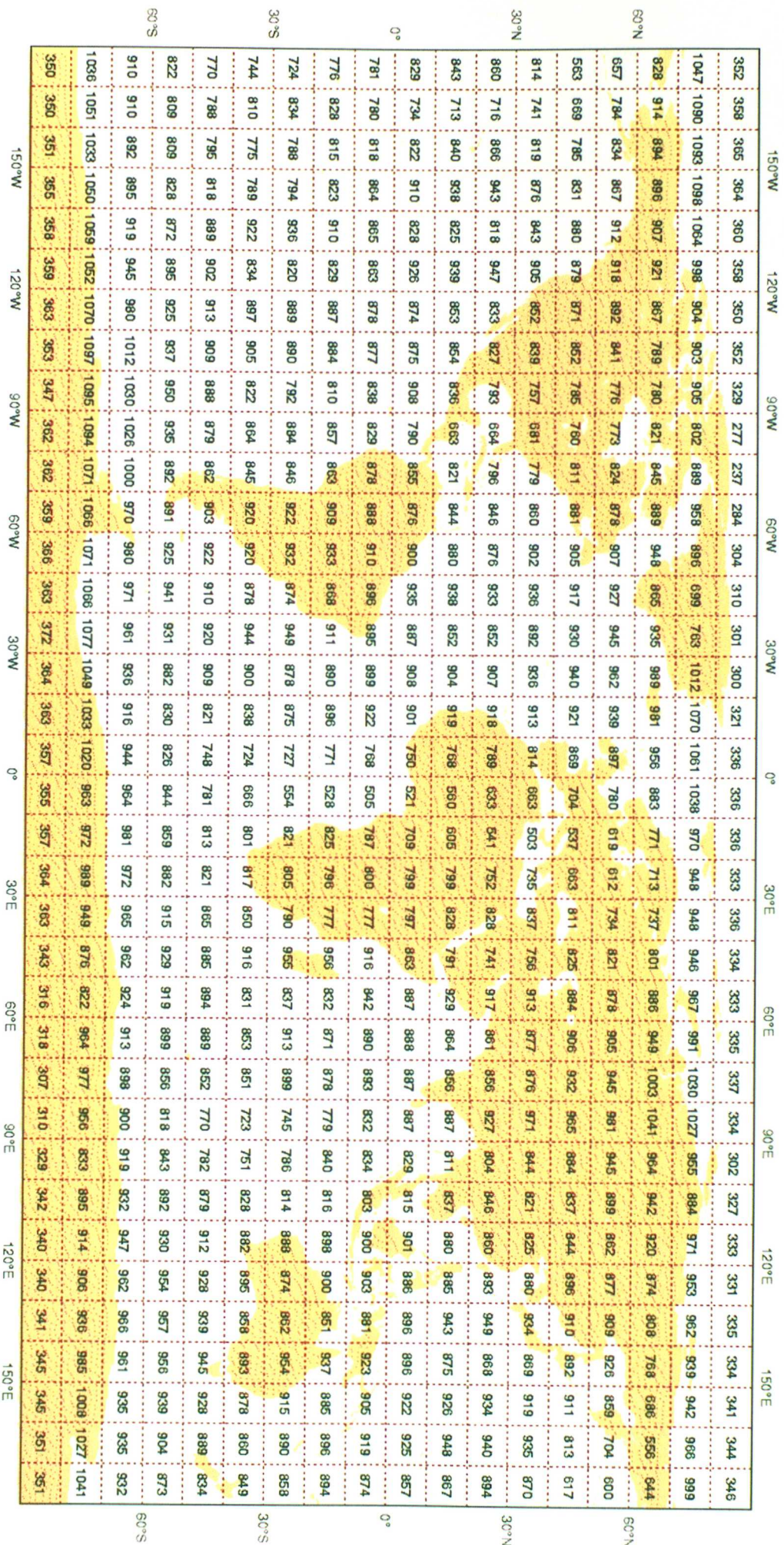




Figure 41. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS8 (Surface)  
NOAA16, using all observations

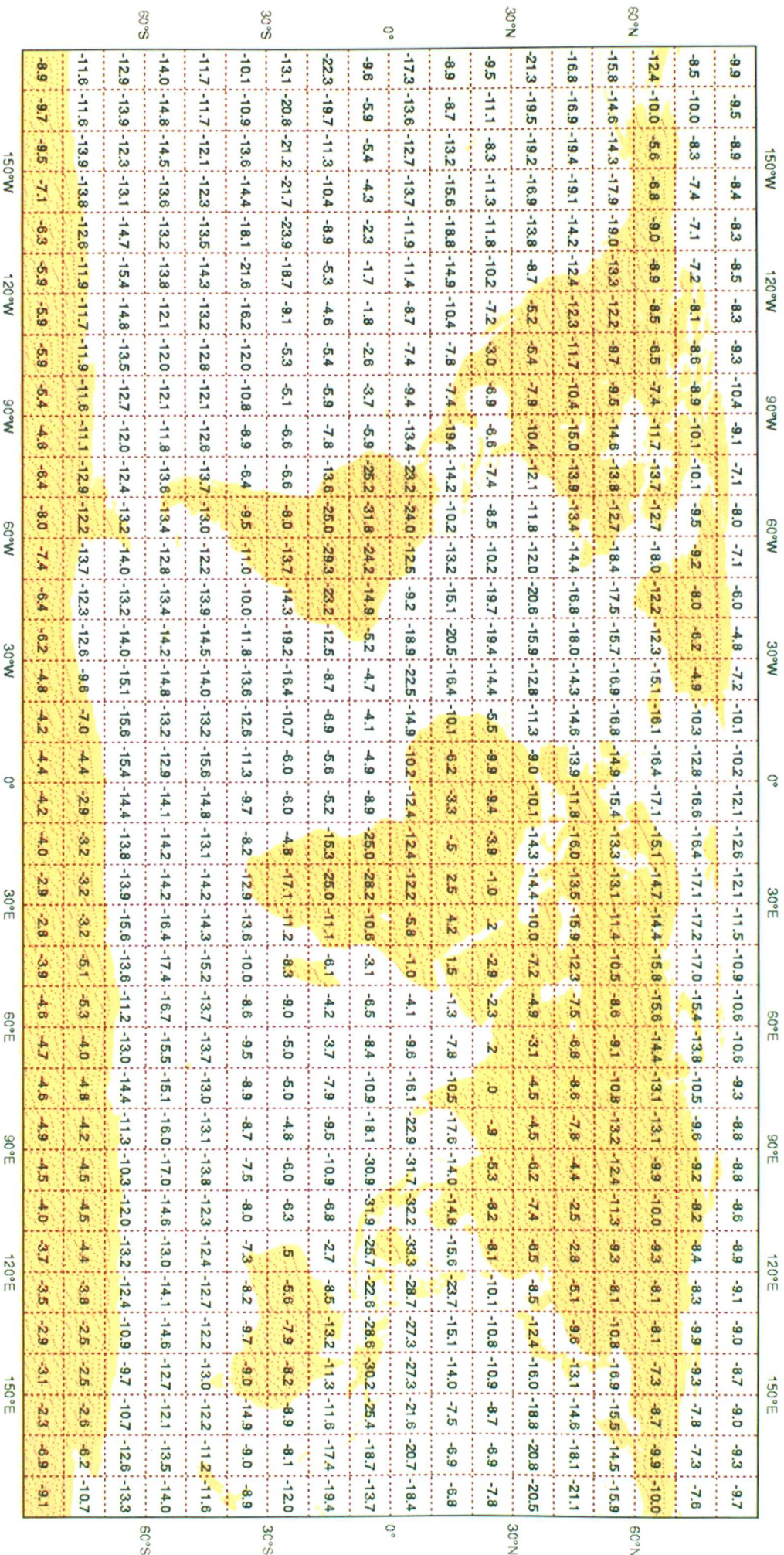




Figure 42. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS8 (Surface)  
NOAA16, using all observations

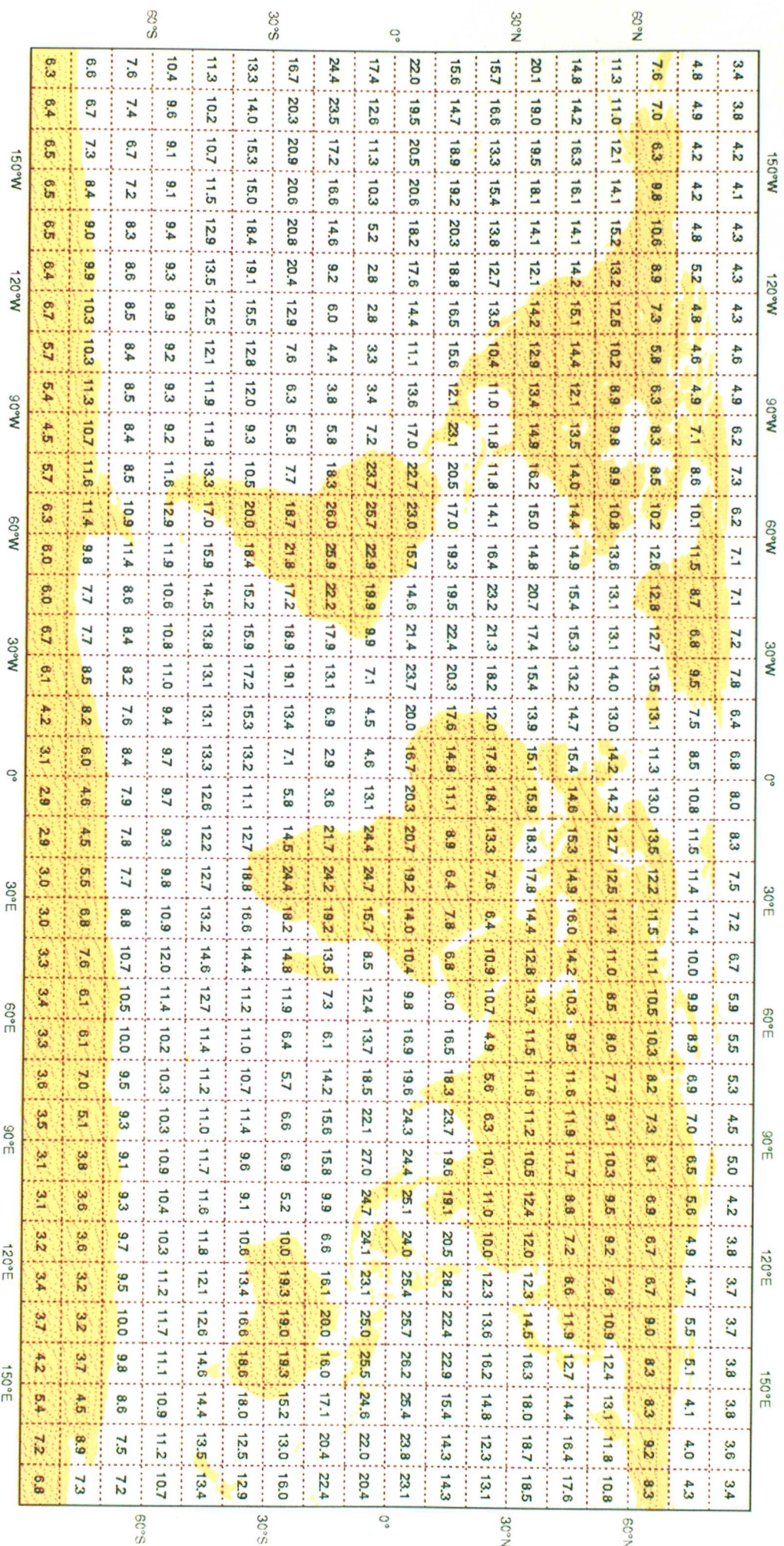




Figure 43. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS15 (700 hPa)  
NOAA16, using all observations

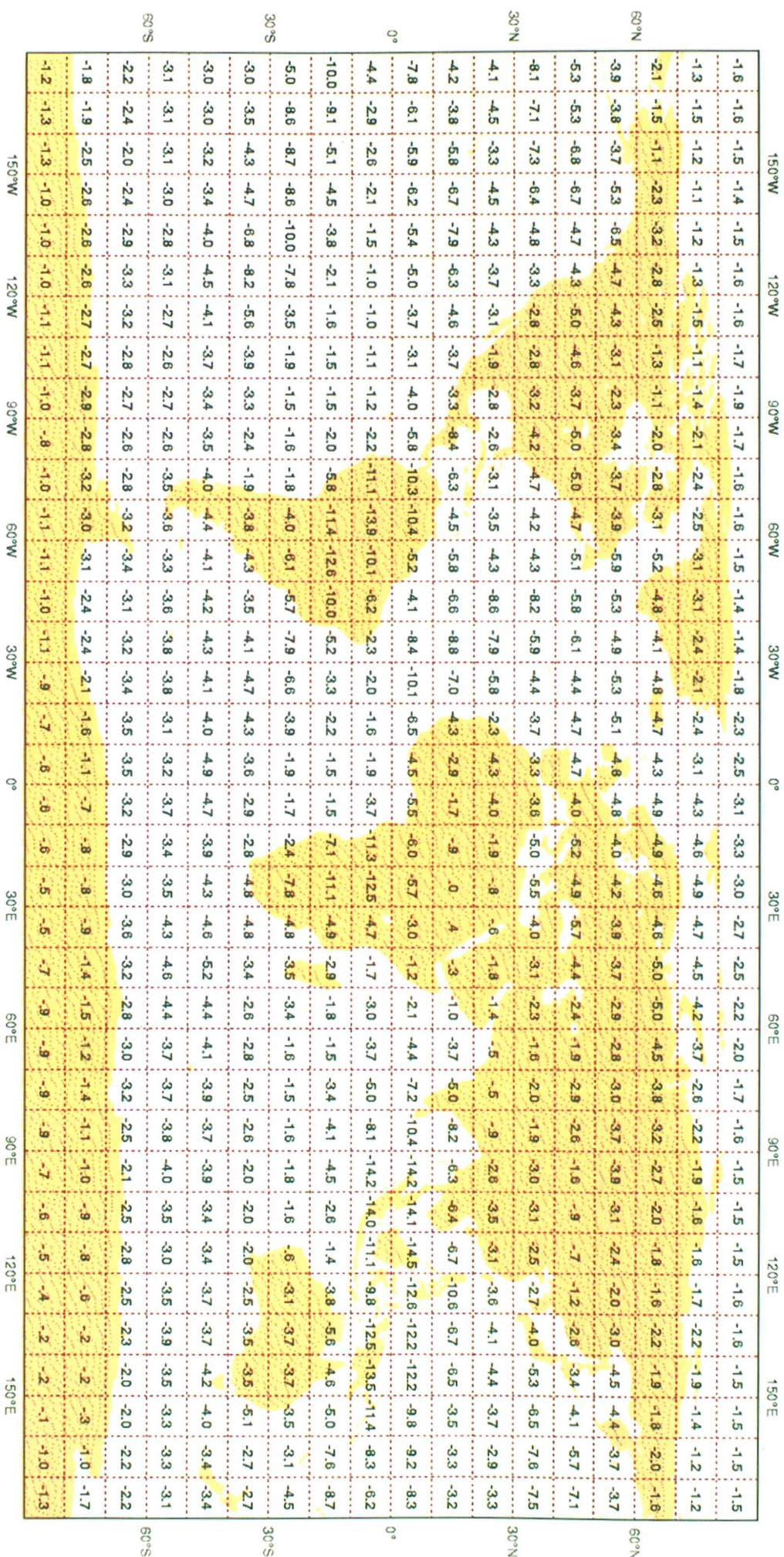




Figure 44. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS15 (700 hPa)  
NOAA16, using all observations

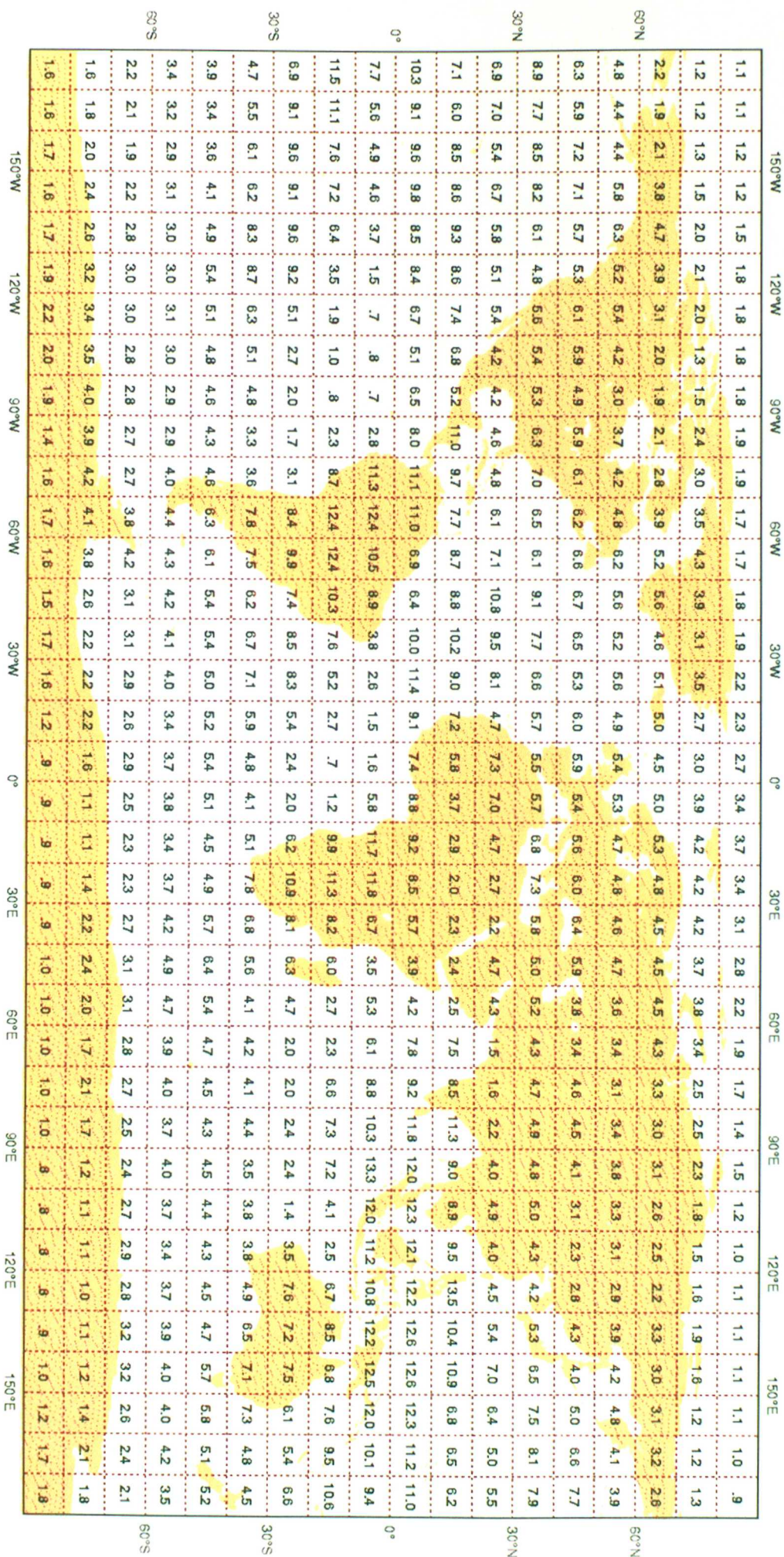




Figure 45. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS11 (500 - 700 hPa)  
NOAA16, using all observations

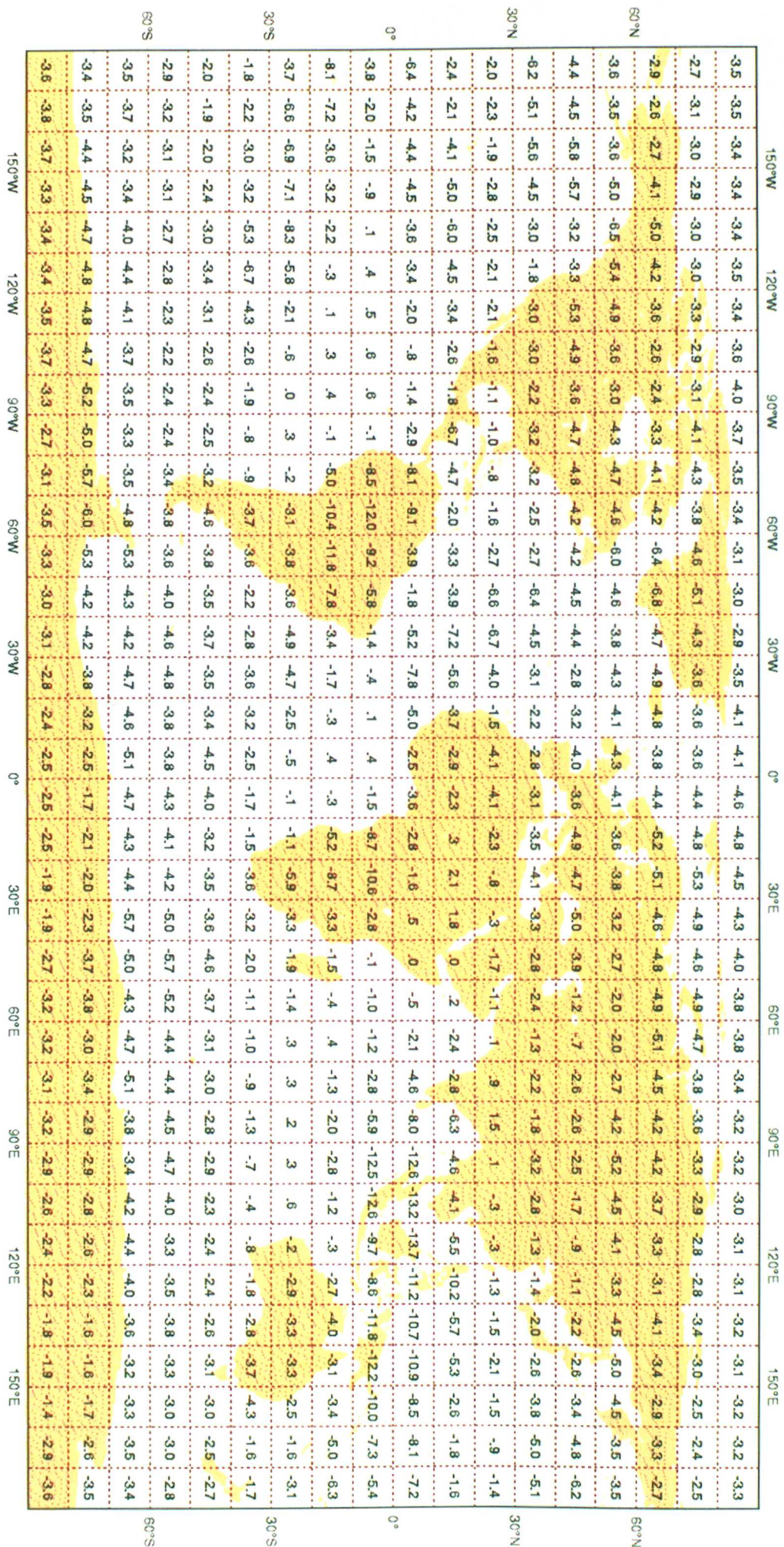




Figure 46. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS11 (500 - 700 hPa)  
NOAA16, using all observations

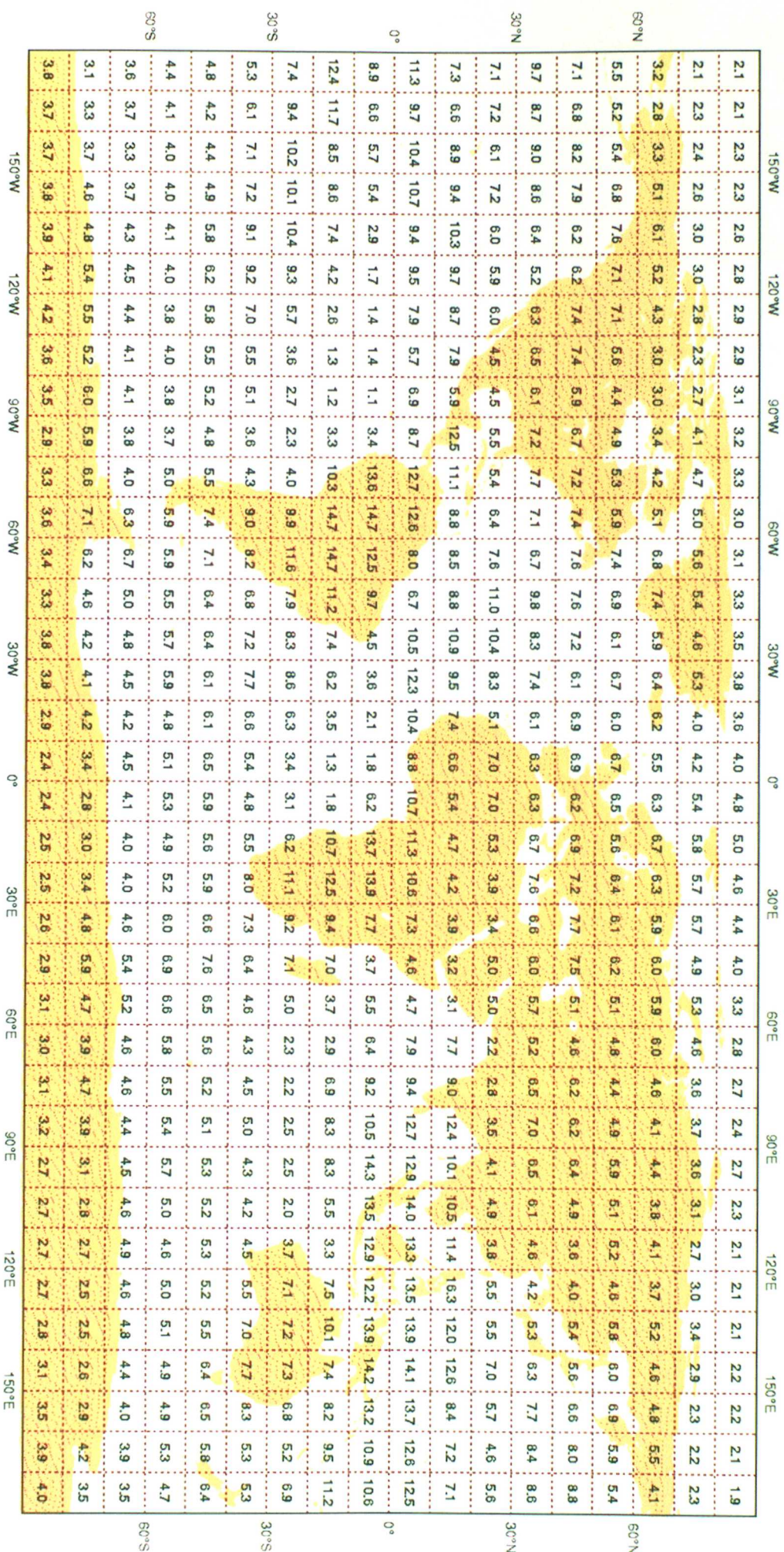




Figure 47. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS4 (400 hPa)  
NOAA16, using all observations

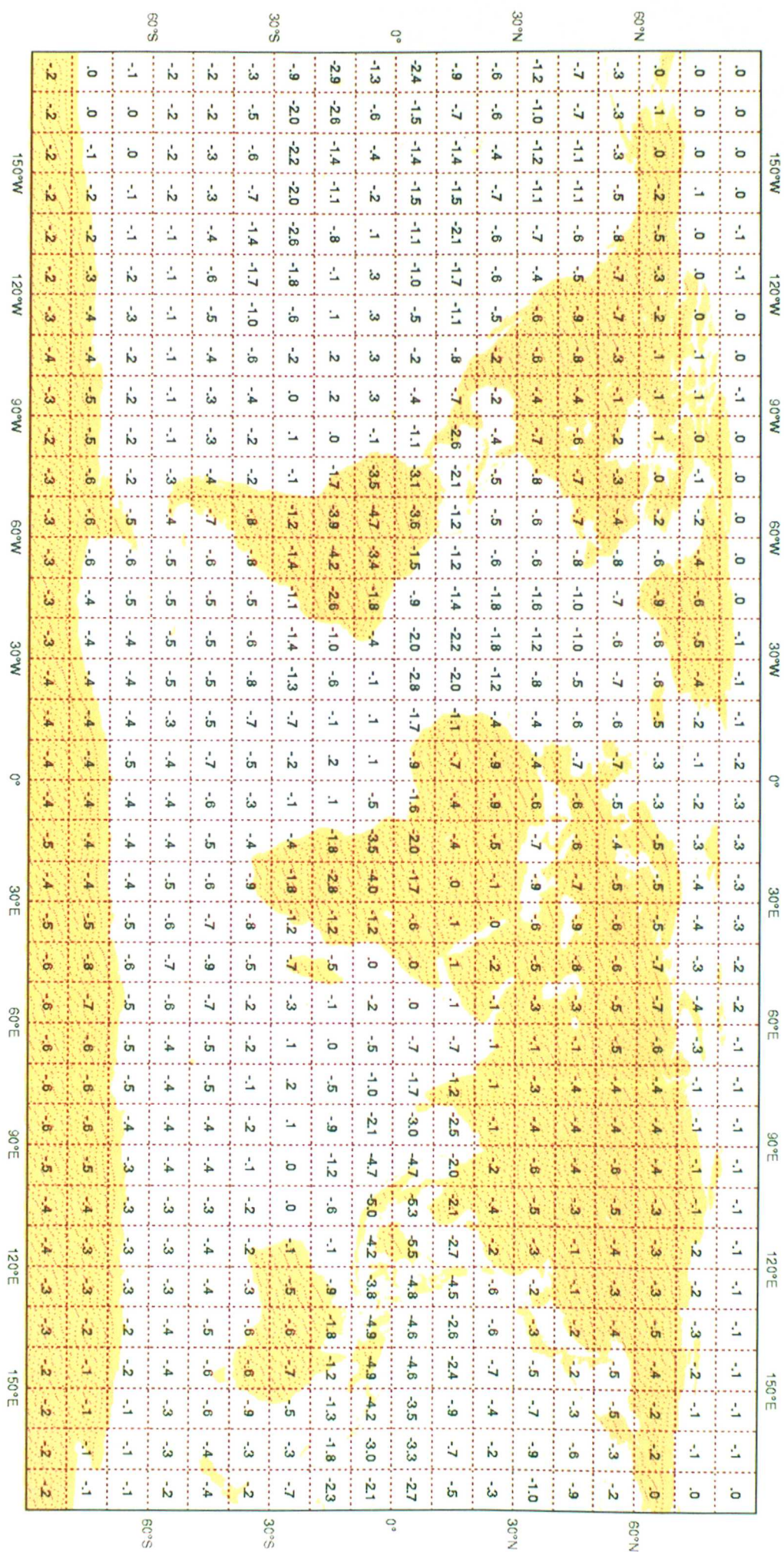
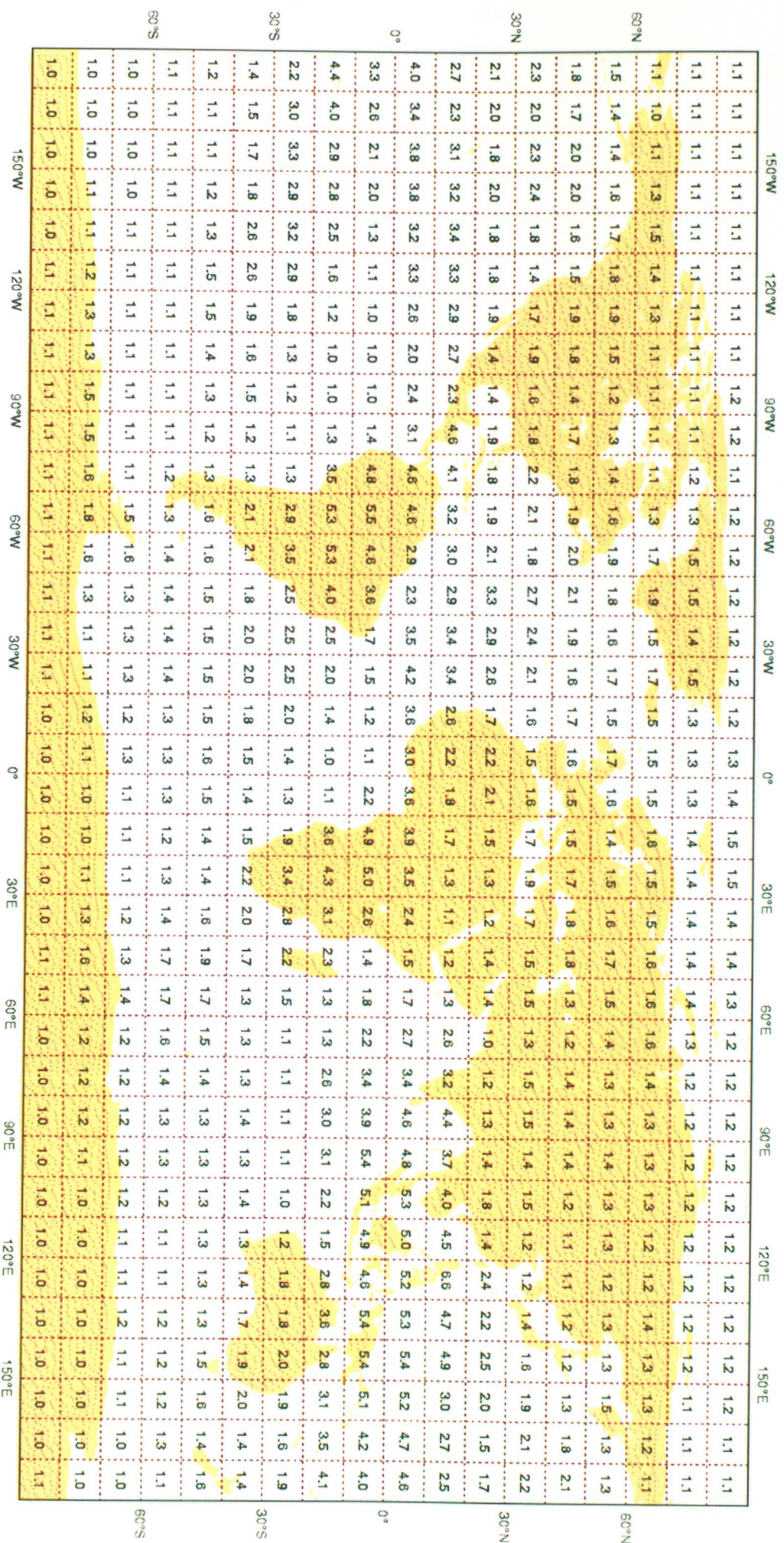




Figure 48. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: HIRS4 (400 hPa)  
NOAA16, using all observations





**NOAA16, using all observations**

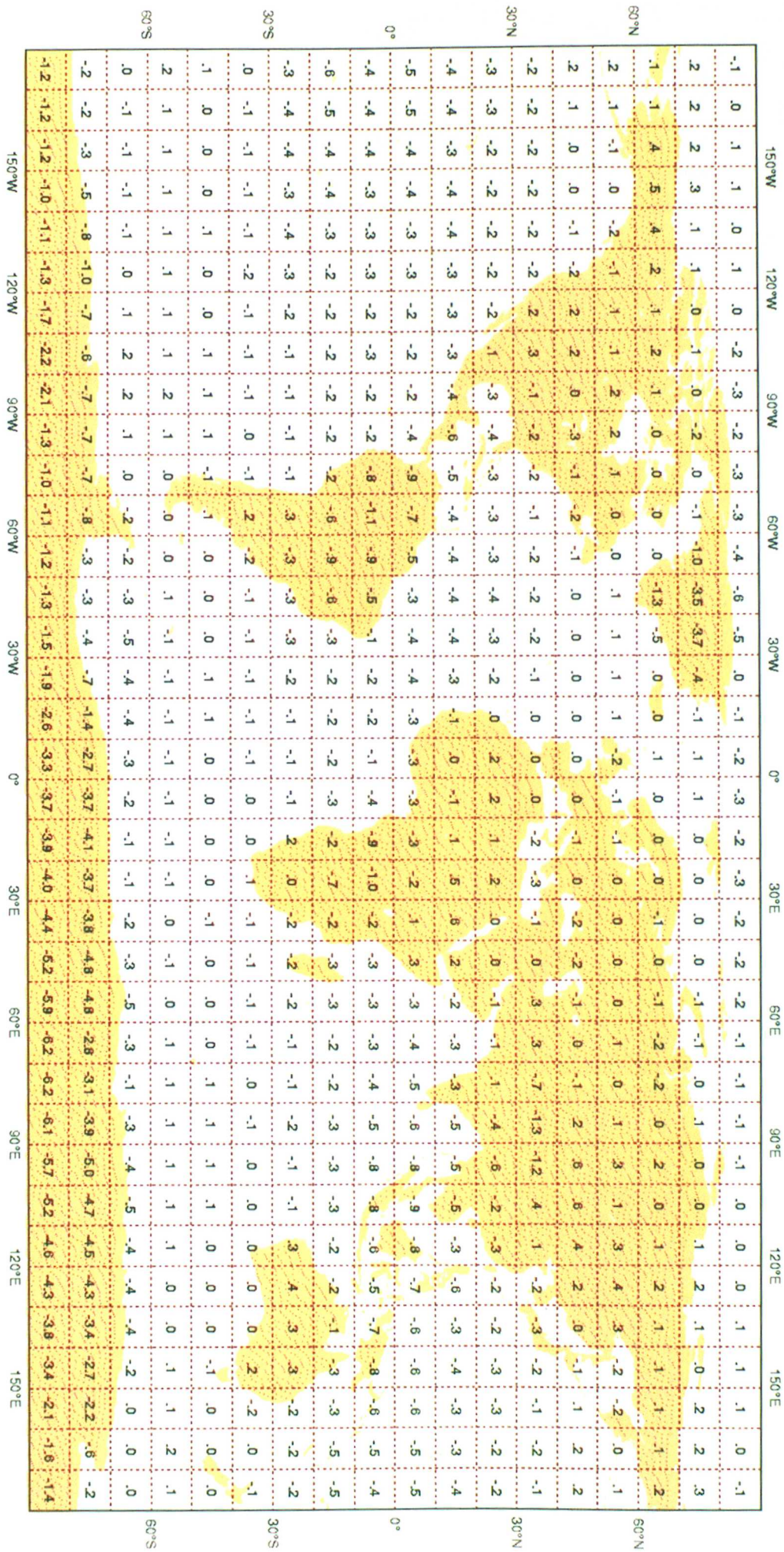




Figure 50. ATOVS SD O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: AMSUA-5 (700 hPa)  
NOAA16, using all observations

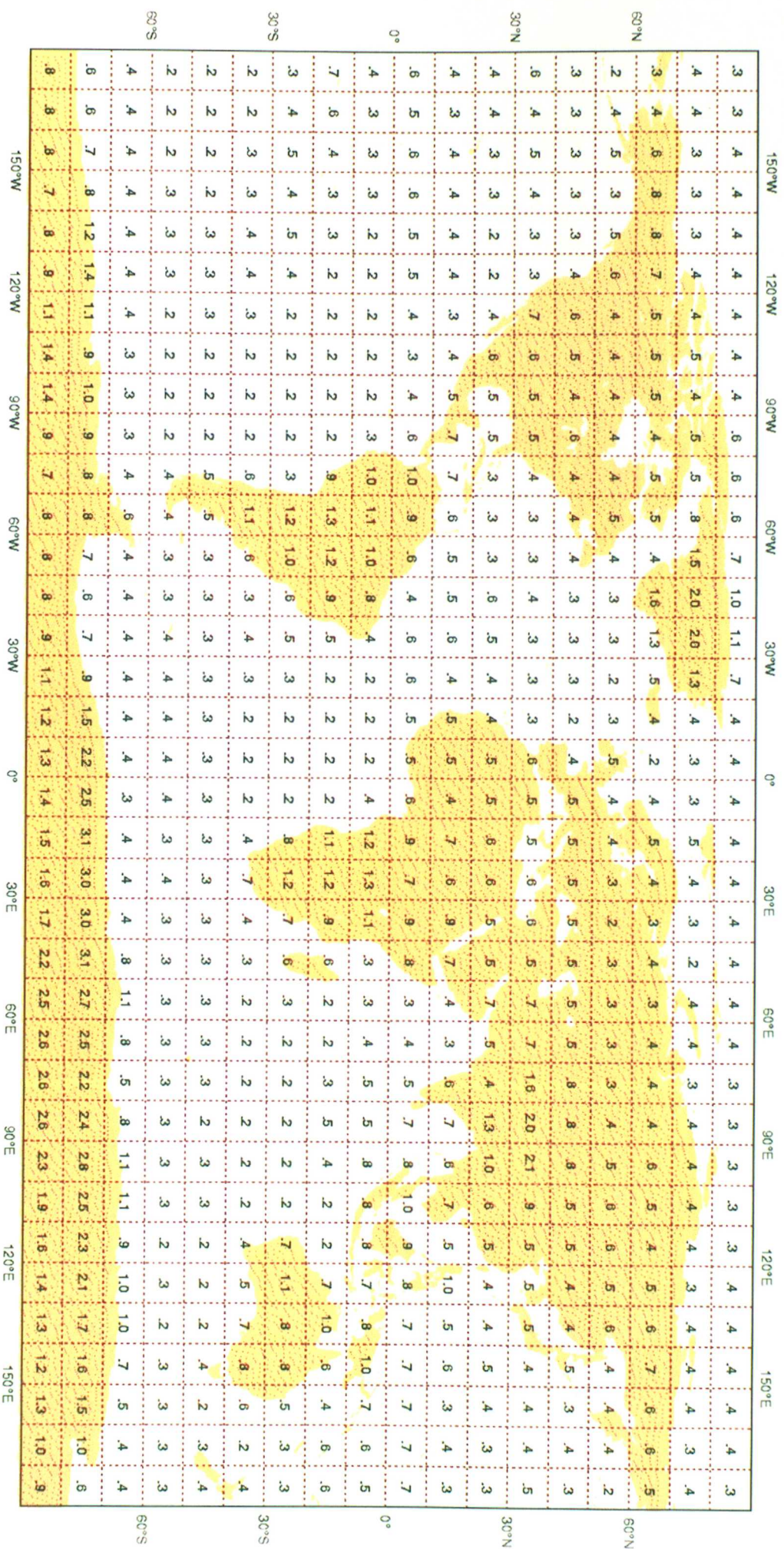
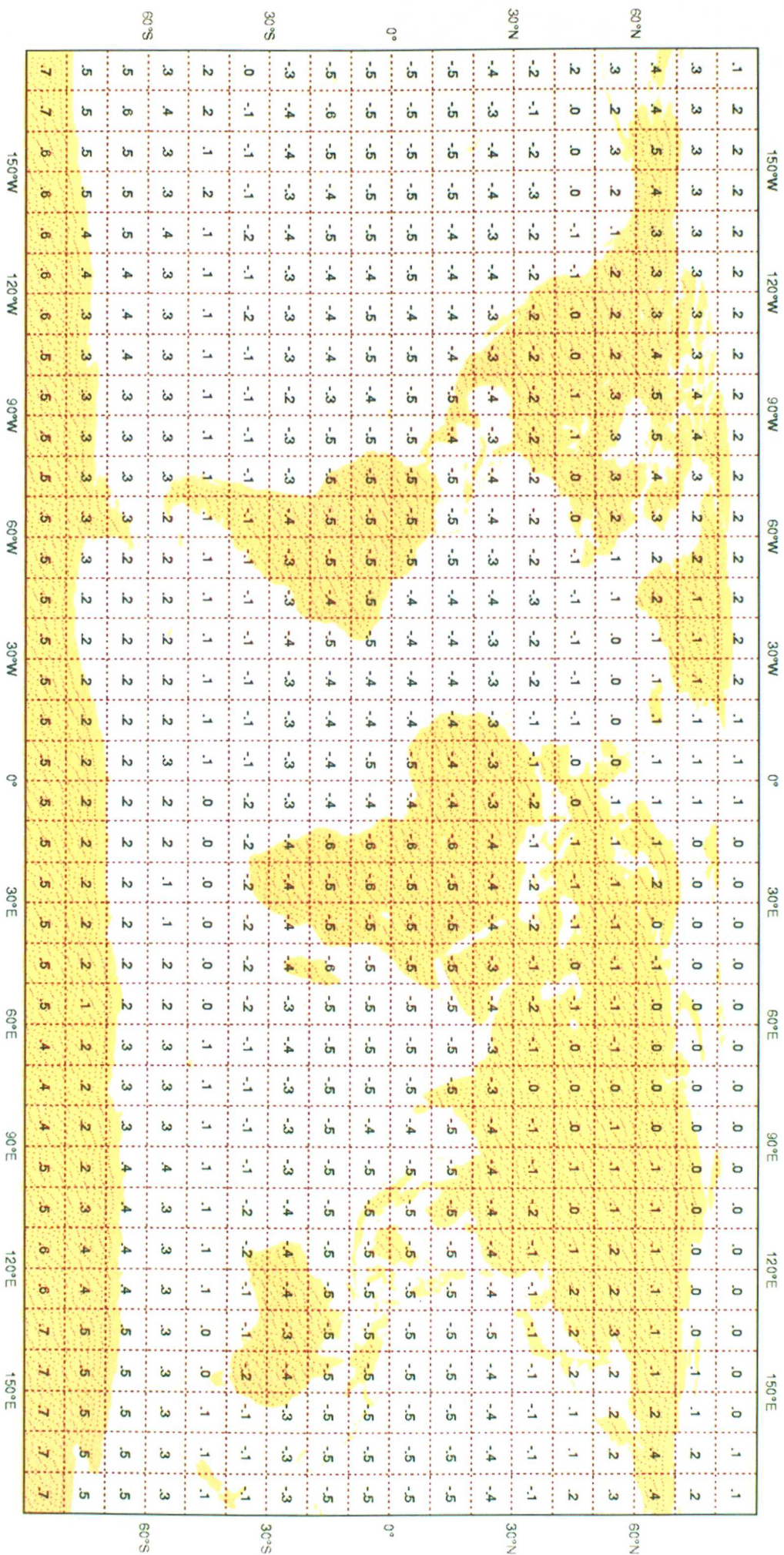




Figure 51. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: AMSUA-7 (300 hPa)  
NOAA16, using all observations





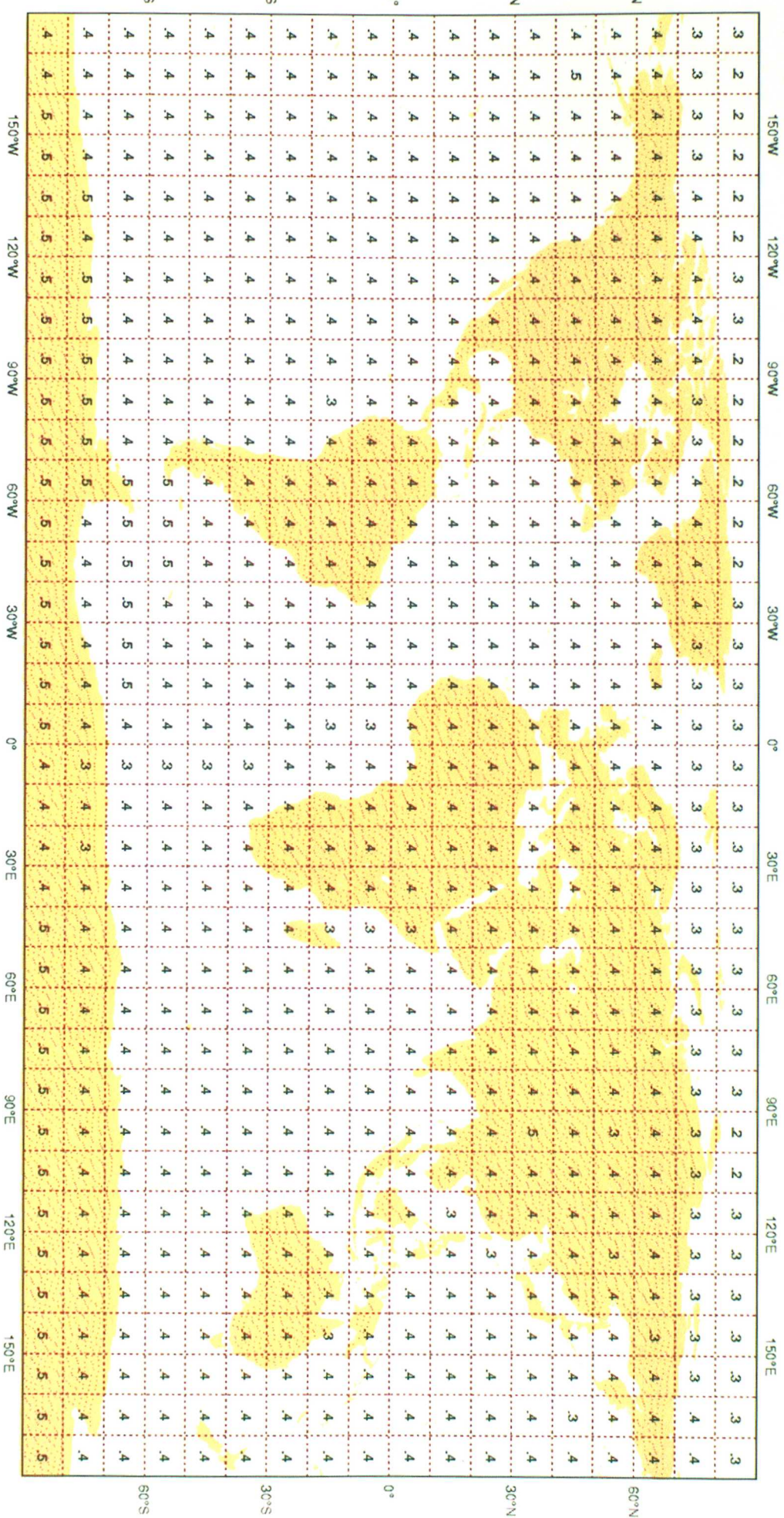
[illegible]



Figure 53. ATOVS MEAN O-B brightness temperature differences (deg C). NOVEMBER 2005  
Channel: AMSUA-9 (100 hPa)  
NOAA16, using all observations

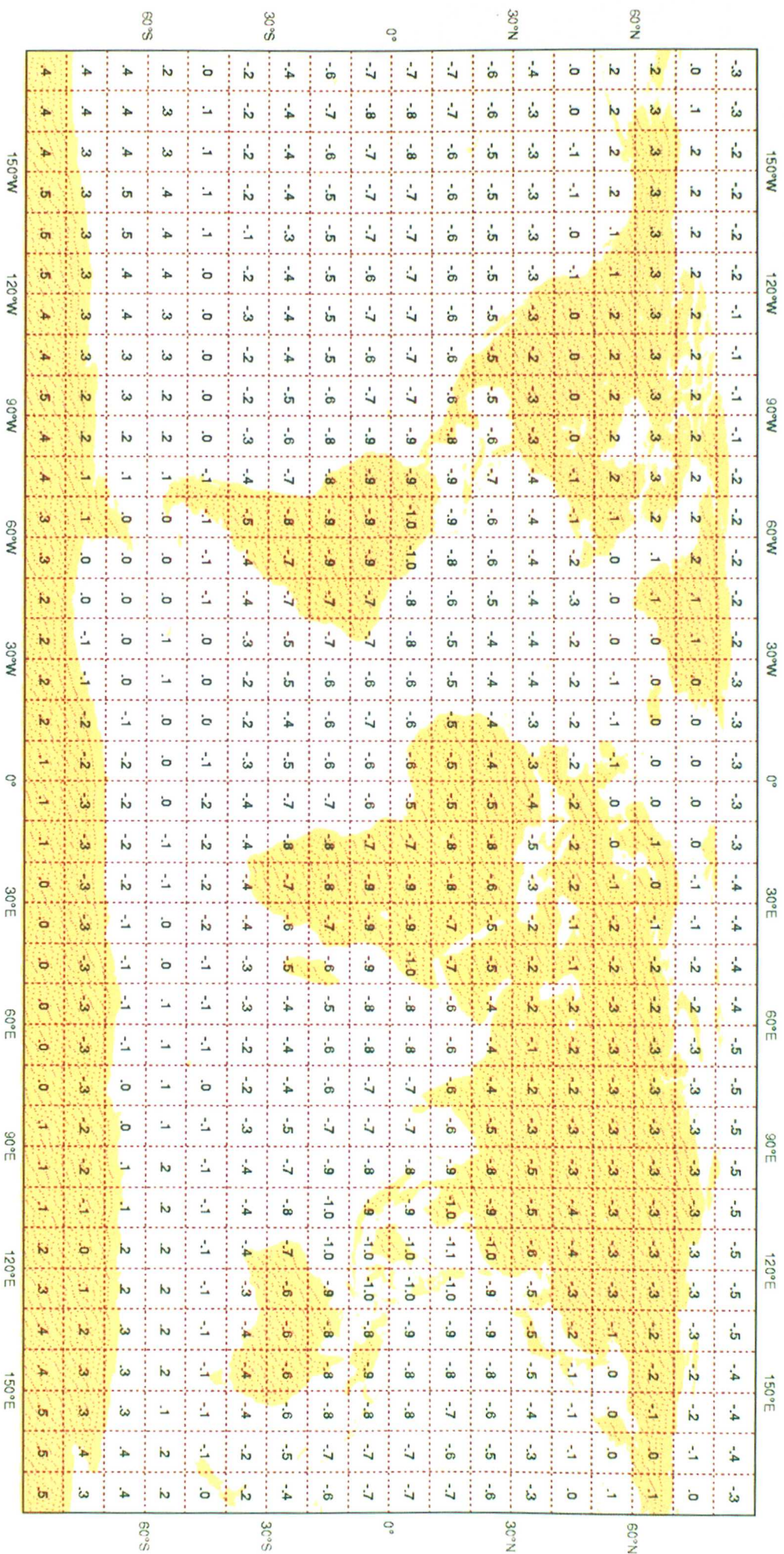








TABLE 8

## MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)

DATA TYPE:- DRIFTER

MONITORING CENTRE: EXETER

MONTH: Nov 2005

## Monitoring procedures

## Period

:One calendar month.

## Data monitored

:Reports from each unique identifier for drifting buoy.

## Area monitored

:10°N - 80°N, 85°W - 0°W

## Standard of comparison

:Background field from UKMO global model.

## Position

:Average latitude and longitude for period.

## Observation times

:All hours combined.

## Elements monitored

:Mean sea-level pressure (hPa)

:Wind speed ( $\text{m s}^{-1}$ )

:Wind direction (degrees)

## Parameters monitored

:NOBS

:Number of observations received excluding duplicates.

:NGE

:Number of observations with gross errors.

:PGE

:Percentage of observations with gross errors.

:SD

:SD of difference of observations from background values excluding those with gross errors.

:BIAS

:Mean difference of observations from background values excluding those with gross errors.

**N.B. A positive bias indicates the wind observation is veered to the background**

:RMS

:Root Mean Square difference of observations from background values excluding those with gross errors

## GROSS ERROR LIMITS

:15 hPa (pressure)

:25  $\text{m s}^{-1}$  (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed  $> 5 \text{ m s}^{-1}$



| IDENTIFIER | LAT. | LONG. | ELEM | NOBS | PGE | %REJ | SD  | BIAS | RMS |
|------------|------|-------|------|------|-----|------|-----|------|-----|
| 13534      | 28.9 | -39.0 | P    | 679  | 0   | 3    | 0.9 | -0.2 | 1.0 |
| 25524      | 76.1 | -9.0  | P    | 15   | 0   | 0    | 0.3 | -0.2 | 0.3 |
| 41501      | 12.5 | -57.1 | P    | 697  | 0   | 12   | 0.6 | -0.2 | 0.7 |
| 41502      | 13.1 | -54.9 | P    | 664  | 0   | 11   | 1.1 | 0.8  | 1.3 |
| 41525      | 25.4 | -69.2 | P    | 663  | 0   | 10   | 0.6 | 0.0  | 0.6 |
| 41528      | 28.3 | -74.7 | P    | 672  | 10  | 29   | 2.7 | -0.4 | 2.7 |
| 41543      | 29.7 | -50.1 | P    | 689  | 0   | 12   | 1.1 | 0.5  | 1.2 |
| 41544      | 27.5 | -66.7 | P    | 887  | 0   | 30   | 0.6 | 0.3  | 0.6 |
| 41545      | 24.1 | -61.5 | P    | 687  | 0   | 11   | 0.6 | 1.1  | 1.2 |
| 41625      | 27.4 | -70.4 | P    | 616  | 0   | 10   | 0.8 | 0.4  | 0.8 |
| 41630      | 26.2 | -74.6 | P    | 652  | 0   | 11   | 0.7 | 0.1  | 0.7 |
| 41643      | 22.1 | -69.8 | P    | 639  | 0   | 11   | 0.6 | 0.2  | 0.7 |
| 41645      | 27.3 | -67.2 | P    | 878  | 0   | 33   | 0.6 | 0.4  | 0.8 |
| 41646      | 26.1 | -76.5 | P    | 601  | 0   | 9    | 0.6 | 0.3  | 0.7 |
| 41927      | 28.6 | -77.0 | P    | 556  | 0   | 36   | 0.7 | -0.1 | 0.7 |
| 41931      | 40.4 | -50.7 | P    | 476  | 1   | 35   | 1.4 | 0.2  | 1.4 |
| 41934      | 28.9 | -74.4 | P    | 385  | 2   | 60   | 3.2 | 2.2  | 3.9 |
| 44549      | 60.9 | -4.1  | P    | 610  | 1   | 2    | 0.6 | 0.2  | 0.6 |
| 44550      | 53.3 | -12.3 | P    | 585  | 0   | 1    | 0.7 | -0.1 | 0.7 |
| 44607      | 37.1 | -28.3 | P    | 679  | 0   | 1    | 0.6 | -0.1 | 0.6 |
| 44608      | 38.0 | -25.6 | P    | 284  | 0   | 0    | 0.4 | -0.2 | 0.4 |
| 44609      | 48.8 | -17.5 | P    | 574  | 0   | 1    | 0.6 | -0.1 | 0.6 |
| 44610      | 51.1 | -33.6 | P    | 215  | 0   | 0    | 0.8 | -0.5 | 0.9 |
| 44611      | 59.0 | -22.1 | P    | 676  | 0   | 1    | 0.6 | -0.2 | 0.6 |
| 44612      | 62.0 | -6.3  | P    | 619  | 0   | 1    | 0.6 | 0.2  | 0.6 |
| 44615      | 44.1 | -33.8 | P    | 677  | 0   | 1    | 0.8 | -0.2 | 0.8 |
| 44635      | 42.6 | -54.1 | P    | 300  | 0   | 13   | 0.7 | 0.9  | 1.1 |
| 44636      | 44.1 | -59.7 | P    | 280  | 0   | 11   | 0.9 | -0.5 | 1.0 |
| 44637      | 42.6 | -63.2 | P    | 397  | 0   | 16   | 0.7 | 0.3  | 0.8 |
| 44722      | 48.4 | -21.2 | P    | 661  | 0   | 1    | 0.6 | -0.3 | 0.6 |
| 44723      | 58.1 | -43.8 | P    | 681  | 0   | 1    | 0.7 | -0.2 | 0.7 |
| 44725      | 53.9 | -41.8 | P    | 680  | 0   | 1    | 0.7 | 0.4  | 0.8 |
| 44727      | 40.9 | -25.0 | P    | 672  | 0   | 1    | 0.5 | 0.0  | 0.5 |
| 44728      | 50.5 | -26.9 | P    | 675  | 0   | 1    | 0.6 | 0.3  | 0.6 |
| 44729      | 46.0 | -59.7 | P    | 674  | 0   | 1    | 0.6 | -0.7 | 0.9 |
| 44730      | 56.4 | -40.5 | P    | 375  | 0   | 1    | 0.5 | -0.2 | 0.6 |
| 44742      | 53.5 | -44.9 | P    | 349  | 0   | 1    | 0.6 | -0.2 | 0.6 |
| 44743      | 34.8 | -10.7 | P    | 618  | 0   | 0    | 0.6 | 0.6  | 0.9 |
| 44760      | 51.0 | -47.3 | P    | 671  | 0   | 1    | 0.7 | 0.0  | 0.7 |
| 44761      | 46.0 | -45.2 | P    | 649  | 0   | 1    | 0.7 | 0.0  | 0.7 |
| 44831      | 53.1 | -24.7 | P    | 754  | 0   | 16   | 0.6 | -0.3 | 0.7 |
| 44832      | 53.6 | -29.2 | P    | 736  | 0   | 15   | 0.8 | -0.2 | 0.9 |
| 44840      | 61.9 | -15.6 | P    | 179  | 32  | 66   | 6.9 | -0.3 | 6.9 |
| 44842      | 59.7 | -17.9 | P    | 882  | 0   | 28   | 0.8 | -0.4 | 0.9 |
| 44843      | 58.9 | -35.5 | P    | 1042 | 0   | 39   | 0.6 | -0.2 | 0.6 |
| 44844      | 59.1 | -26.2 | P    | 996  | 0   | 37   | 0.6 | -0.2 | 0.6 |
| 44845      | 44.1 | -46.7 | P    | 898  | 0   | 32   | 0.7 | 0.0  | 0.7 |
| 44846      | 45.5 | -18.3 | P    | 715  | 0   | 15   | 0.8 | 0.0  | 0.8 |
| 44847      | 40.3 | -22.6 | P    | 708  | 0   | 14   | 0.5 | 0.0  | 0.5 |
| 44848      | 38.0 | -34.1 | P    | 711  | 0   | 13   | 0.6 | 0.0  | 0.6 |
| 44849      | 46.2 | -30.8 | P    | 702  | 0   | 15   | 1.9 | -0.1 | 1.9 |
| 44850      | 43.7 | -23.0 | P    | 699  | 0   | 13   | 0.5 | -0.1 | 0.6 |
| 44901      | 36.2 | -37.4 | P    | 703  | 0   | 13   | 0.6 | 0.0  | 0.6 |
| 44903      | 42.1 | -65.4 | P    | 728  | 0   | 13   | 0.6 | 0.2  | 0.7 |
| 47555      | 73.1 | -77.0 | P    | 1368 | 0   | 67   | 0.8 | 0.1  | 0.8 |
| 62502      | 44.8 | -3.6  | P    | 117  | 0   | 0    | 0.4 | 0.3  | 0.5 |
| 62503      | 44.5 | -5.6  | P    | 587  | 0   | 1    | 0.6 | 0.2  | 0.6 |
| 62504      | 45.0 | -10.1 | P    | 682  | 0   | 2    | 1.4 | -0.1 | 1.4 |
| 62510      | 32.1 | -23.6 | P    | 994  | 0   | 35   | 0.8 | 0.0  | 0.8 |
| 62511      | 47.2 | -9.7  | P    | 637  | 0   | 1    | 0.6 | 0.7  | 0.9 |



| IDENTIFIER | LAT. | LONG. | ELEM  | NOBS | PGE | %REJ | SD   | BIAS  | RMS   |
|------------|------|-------|-------|------|-----|------|------|-------|-------|
| 62514      | 62.9 | -41.6 | P     | 630  | 0   | 1    | 1.2  | 0.4   | 1.3   |
| 62515      | 45.6 | -5.7  | P     | 1182 | 0   | 45   | 0.5  | -0.2  | 0.5   |
| 62556      | 26.7 | -40.0 | P     | 672  | 0   | 1    | 0.7  | 0.2   | 0.7   |
| 62557      | 25.4 | -35.4 | P     | 674  | 0   | 1    | 0.6  | 0.0   | 0.6   |
| 62560      | 44.6 | -24.9 | P     | 1117 | 0   | 44   | 0.7  | -0.1  | 0.7   |
| 62562      | 49.0 | -17.1 | P     | 612  | 0   | 1    | 0.6  | 0.3   | 0.7   |
| 62564      | 36.9 | -16.6 | P     | 677  | 0   | 1    | 0.5  | 0.7   | 0.9   |
| 62566      | 59.5 | -13.2 | P     | 655  | 0   | 2    | 0.9  | 0.1   | 0.9   |
| 62567      | 38.4 | -16.0 | P     | 645  | 0   | 1    | 0.5  | -0.3  | 0.6   |
| 62568      | 56.4 | -14.7 | P     | 679  | 0   | 2    | 0.8  | 0.6   | 1.0   |
| 62569      | 56.1 | -30.3 | P     | 677  | 0   | 0    | 0.6  | 0.5   | 0.8   |
| 62570      | 58.7 | -34.3 | P     | 674  | 0   | 1    | 0.6  | -0.1  | 0.6   |
| 62901      | 58.1 | -8.9  | P     | 600  | 0   | 17   | 0.7  | -0.2  | 0.7   |
| 62907      | 44.1 | -3.3  | P     | 204  | 0   | 7    | 0.5  | -0.4  | 0.6   |
| 62909      | 46.6 | -8.9  | P     | 3    | 0   | 33   | 1.8  | -2.6  | 3.2   |
| 62927      | 43.5 | -12.2 | P     | 16   | 0   | 50   | 5.0  | -3.0  | 5.9   |
| 62928      | 45.3 | -4.8  | P     | 33   | 3   | 9    | 1.6  | 0.2   | 1.6   |
| 62931      | 41.7 | -8.9  | P     | 61   | 0   | 10   | 1.1  | 0.1   | 1.1   |
| 62932      | 48.6 | -4.4  | P     | 166  | 0   | 15   | 1.3  | -0.3  | 1.3   |
| 62934      | 48.6 | -10.8 | P     | 707  | 0   | 14   | 0.6  | -0.1  | 0.6   |
| 62935      | 42.4 | -20.7 | P     | 703  | 0   | 13   | 0.6  | -0.1  | 0.6   |
| 62936      | 52.1 | -11.5 | P     | 726  | 0   | 15   | 0.7  | 0.1   | 0.7   |
| 64609      | 62.0 | -49.7 | P     | 683  | 0   | 1    | 0.9  | -0.6  | 1.1   |
| 64612      | 60.9 | -21.6 | P     | 683  | 0   | 1    | 0.5  | -1.0  | 1.1   |
| 64613      | 62.2 | -28.5 | P     | 676  | 0   | 1    | 0.6  | 0.0   | 0.6   |
| 64614      | 62.8 | -26.1 | P     | 402  | 0   | 1    | 0.6  | 0.0   | 0.6   |
| 64929      | 58.9 | -22.7 | P     | 752  | 0   | 16   | 0.6  | -0.1  | 0.6   |
| IDENTIFIER | LAT. | LONG. | ELEM  | NOBS | PGE | %REJ | SD   | BIAS  | RMS   |
| 41525      | 25.4 | -69.2 | SPEED | 657  | 0   | 100  | 2.4  | -0.3  | 2.4   |
| 41542      | 26.7 | -75.9 | SPEED | 613  | 0   | 100  | 2.0  | -2.5  | 3.2   |
| 41543      | 29.7 | -50.1 | SPEED | 669  | 0   | 100  | 2.0  | -3.4  | 4.0   |
| 41630      | 26.2 | -74.6 | SPEED | 642  | 0   | 100  | 2.7  | 0.4   | 2.8   |
| 41643      | 22.1 | -69.8 | SPEED | 635  | 0   | 100  | 2.0  | 0.0   | 2.0   |
| 41645      | 27.3 | -67.2 | SPEED | 869  | 0   | 100  | 2.4  | 0.5   | 2.4   |
| 41646      | 26.1 | -76.5 | SPEED | 585  | 0   | 100  | 3.4  | 2.5   | 4.2   |
| 41927      | 28.6 | -77.0 | SPEED | 6    | 33  | 100  | 6.4  | 10.9  | 12.7  |
| 41931      | 40.4 | -50.7 | SPEED | 7    | 29  | 100  | 2.4  | 12.5  | 12.7  |
| 41934      | 28.9 | -74.4 | SPEED | 37   | 49  | 100  | 6.2  | 5.4   | 8.2   |
| 41939      | 39.4 | -57.7 | SPEED | 49   | 61  | 100  | 9.3  | 5.8   | 11.0  |
| IDENTIFIER | LAT. | LONG. | ELEM  | NOBS | PGE | %REJ | SD   | BIAS  | RMS   |
| 41525      | 25.4 | -69.2 | DIRN. | 474  | 0   | 0    | 21.9 | 5.1   | 22.5  |
| 41542      | 26.7 | -75.9 | DIRN. | 280  | 0   | 0    | 20.1 | 120.8 | 122.5 |
| 41543      | 29.7 | -50.1 | DIRN. | 293  | 0   | 0    | 14.9 | -5.7  | 15.9  |
| 41630      | 26.2 | -74.6 | DIRN. | 440  | 0   | 0    | 19.3 | 10.4  | 22.0  |
| 41643      | 22.1 | -69.8 | DIRN. | 540  | 0   | 0    | 17.7 | 25.3  | 30.9  |
| 41645      | 27.3 | -67.2 | DIRN. | 591  | 0   | 0    | 15.9 | 14.8  | 21.8  |
| 41646      | 26.1 | -76.5 | DIRN. | 474  | 0   | 0    | 16.2 | 7.9   | 18.0  |
| 41927      | 28.6 | -77.0 | DIRN. | 5    | 40  | 0    | 35.5 | -28.9 | 45.8  |
| 41931      | 40.4 | -50.7 | DIRN. | 7    | 29  | 0    | 62.6 | 48.9  | 79.4  |
| 41934      | 28.9 | -74.4 | DIRN. | 29   | 62  | 0    | 98.8 | 23.4  | 101.5 |
| 41939      | 39.4 | -57.7 | DIRN. | 38   | 79  | 0    | 58.8 | -9.4  | 59.6  |



TABLE 9

**MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)**  
**MONITORING CENTRE: EXETER**  
**MONTH: Nov 2005**

|                               |         |                                                                                                                                     |
|-------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>Monitoring procedures:</b> |         |                                                                                                                                     |
| <b>Period</b>                 |         | :One calendar month.                                                                                                                |
| <b>Data monitored</b>         |         | :Statistics for each airline carrier.                                                                                               |
| <b>Area monitored</b>         |         | :40°N - 70°N, 60°W - 0°W.                                                                                                           |
| <b>Standard of comparison</b> |         | :Background field from UKMO global model.                                                                                           |
| <b>Observation times</b>      |         | :All hours combined.                                                                                                                |
| <b>Level(s) monitored</b>     |         | :300.0 - 150.0 hPa                                                                                                                  |
| <b>Elements monitored</b>     |         | :TEMP in °C ; WIND in m s <sup>-1</sup>                                                                                             |
| <b>Parameters monitored</b>   | :N REP. | :Number of observations received excluding duplicates.                                                                              |
|                               | :PG     | :Percentage of observations with gross errors.                                                                                      |
|                               | :PR     | :Percentage of observations rejected by quality control including rejections from the duplicate check.                              |
|                               | :PC     | :Percentage of observations with calm winds.                                                                                        |
|                               | :RMS    | :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind. |
|                               | :BIAS   | :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.             |
| <b>GROSS ERROR LIMITS</b>     |         | :10.0 °C ; 60 m s <sup>-1</sup> Vector Wind                                                                                         |
| <b>SELECTION CRITERIA</b>     |         | :N REP ≥ 20                                                                                                                         |

**NB:** All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.



| IDENT. | N.REP. | TEMPERATURE |     |     |      | BIAS | N.REP. | WIND |     |     |      | BIAS |
|--------|--------|-------------|-----|-----|------|------|--------|------|-----|-----|------|------|
|        |        | PG          | PR  | RMS | PG   |      |        | PR   | PC  | RMS |      |      |
| AAL    | 4029   | 0           | 5   | 1.3 | 0.2  |      | 3759   | 0    | 4   | 0   | 5.0  | 0.7  |
| ACA    | 1840   | 0           | 3   | 1.3 | -0.1 |      | 1459   | 0    | 3   | 0   | 5.3  | 0.8  |
| ACF    | 51     | 10          | 43  | 3.6 | -0.5 |      | 23     | 0    | 43  | 0   | 21.2 | 1.6  |
| AEA    | 282    | 1           | 2   | 1.6 | 0.4  |      | 261    | 1    | 5   | 0   | 8.6  | 0.0  |
| AFL    | 365    | 0           | 6   | 1.8 | 0.4  |      | 203    | 1    | 7   | 0   | 10.2 | 0.7  |
|        |        |             |     |     |      |      |        |      |     |     |      |      |
| AFR    | 3726   | 0           | 4   | 1.4 | 0.2  |      | 3615   | 0    | 3   | 0   | 6.1  | 0.6  |
| AJM    | 146    | 3           | 21  | 2.4 | -0.2 |      | 99     | 0    | 65  | 0   | 14.9 | 0.7  |
| AMT    | 87     | 0           | 3   | 1.7 | -0.5 |      | 77     | 0    | 1   | 0   | 6.0  | 0.5  |
| AMX    | 367    | 1           | 5   | 1.9 | 0.3  |      | 301    | 0    | 6   | 0   | 10.4 | 0.0  |
| ANZ    | 121    | 0           | 17  | 1.3 | -0.1 |      | 111    | 0    | 15  | 0   | 4.6  | -0.2 |
|        |        |             |     |     |      |      |        |      |     |     |      |      |
| AUA    | 407    | 0           | 2   | 1.3 | 0.5  |      | 395    | 0    | 2   | 0   | 4.6  | 0.5  |
| AVA    | 50     | 0           | 0   | 1.3 | 0.3  |      | 49     | 2    | 8   | 0   | 11.5 | -0.2 |
| AZA    | 230    | 3           | 20  | 3.2 | 1.7  |      | 159    | 1    | 11  | 0   | 10.8 | 1.0  |
| BAL    | 183    | 1           | 11  | 1.3 | 0.1  |      | 176    | 0    | 15  | 0   | 9.6  | -0.2 |
| BAW    | 614    | 1           | 11  | 1.7 | -0.2 |      | 411    | 0    | 9   | 0   | 8.4  | 0.9  |
|        |        |             |     |     |      |      |        |      |     |     |      |      |
| BMA    | 315    | 0           | 4   | 1.2 | -0.2 |      | 302    | 0    | 4   | 0   | 4.5  | 0.9  |
| BPA    | 191    | 2           | 100 | 3.2 | 1.6  |      | 173    | 1    | 22  | 0   | 12.0 | -1.6 |
| BWA    | 153    | 2           | 5   | 1.5 | -0.4 |      | 109    | 0    | 4   | 0   | 7.5  | 0.7  |
| CFC    | 27     | 0           | 0   | 1.3 | 0.2  |      | 31     | 0    | 6   | 0   | 11.0 | 2.2  |
| CFG    | 494    | 1           | 10  | 1.7 | 0.2  |      | 328    | 1    | 16  | 0   | 11.8 | 0.1  |
|        |        |             |     |     |      |      |        |      |     |     |      |      |
| CGF    | 99     | 0           | 7   | 1.1 | -0.3 |      | 95     | 0    | 7   | 0   | 4.1  | 1.1  |
| CGH    | 160    | 0           | 2   | 1.3 | -0.3 |      | 152    | 0    | 2   | 0   | 4.4  | 0.6  |
| CKS    | 115    | 3           | 10  | 2.1 | 0.8  |      | 62     | 0    | 27  | 0   | 14.3 | -0.3 |
| CLX    | 205    | 0           | 4   | 1.6 | -0.6 |      | 106    | 0    | 6   | 0   | 9.8  | 0.2  |
| CNJ    | 23     | 0           | 17  | 1.1 | 0.8  |      | 23     | 0    | 17  | 0   | 5.1  | -0.5 |
|        |        |             |     |     |      |      |        |      |     |     |      |      |
| COA    | 4678   | 0           | 7   | 1.5 | 0.3  |      | 4541   | 0    | 6   | 0   | 5.0  | 0.6  |
| CRL    | 45     | 0           | 2   | 1.4 | -0.1 |      | 45     | 0    | 7   | 0   | 8.9  | -0.2 |
| CSD    | 57     | 2           | 9   | 2.4 | 0.9  |      | 24     | 0    | 4   | 0   | 5.2  | -0.2 |
| CUB    | 115    | 0           | 8   | 2.1 | -0.4 |      | 87     | 1    | 21  | 0   | 13.3 | -0.1 |
| DAB    | 725    | 0           | 5   | 1.2 | -0.1 |      | 702    | 0    | 5   | 0   | 4.3  | 0.4  |
|        |        |             |     |     |      |      |        |      |     |     |      |      |
| DAI    | 612    | 0           | 5   | 1.2 | 0.2  |      | 593    | 0    | 6   | 0   | 4.3  | 0.8  |
| DAL    | 1012   | 0           | 7   | 1.3 | 0.2  |      | 929    | 0    | 5   | 0   | 4.6  | 0.7  |
| DLH    | 3386   | 0           | 6   | 1.2 | 0.1  |      | 3292   | 0    | 6   | 0   | 4.8  | 0.5  |
| DRD    | 107    | 1           | 3   | 1.9 | 0.2  |      | 107    | 1    | 3   | 0   | 5.8  | 0.1  |
| EDW    | 32     | 6           | 22  | 1.6 | 0.0  |      | 21     | 0    | 33  | 0   | 16.3 | 1.4  |
|        |        |             |     |     |      |      |        |      |     |     |      |      |
| EEZ    | 43     | 0           | 21  | 1.9 | 0.4  |      | 41     | 0    | 15  | 0   | 8.9  | 1.2  |
| EIA    | 64     | 0           | 8   | 1.7 | 0.1  |      | 51     | 0    | 100 | 0   | 24.7 | 5.4  |
| ELY    | 411    | 0           | 1   | 1.3 | 0.3  |      | 378    | 1    | 2   | 0   | 5.3  | 0.5  |
| ESS    | 156    | 1           | 17  | 3.1 | 1.6  |      | 46     | 0    | 4   | 0   | 7.5  | 0.3  |
| FCA    | 72     | 0           | 100 | 3.8 | 2.5  |      | 40     | 0    | 3   | 0   | 7.9  | 1.9  |
|        |        |             |     |     |      |      |        |      |     |     |      |      |
| FDX    | 476    | 1           | 42  | 1.5 | 0.4  |      | 271    | 0    | 39  | 0   | 5.9  | 0.3  |
| FGI    | 179    | 0           | 2   | 1.1 | -0.4 |      | 174    | 0    | 2   | 0   | 4.7  | 0.4  |
| FGL    | 118    | 0           | 6   | 1.3 | 0.2  |      | 116    | 0    | 6   | 0   | 4.3  | 1.0  |
| FGN    | 37     | 0           | 8   | 1.5 | 0.4  |      | 36     | 0    | 3   | 0   | 3.7  | 1.1  |
| FGS    | 481    | 0           | 3   | 1.3 | 0.3  |      | 466    | 0    | 3   | 0   | 4.2  | 0.9  |
|        |        |             |     |     |      |      |        |      |     |     |      |      |
| FGZ    | 50     | 0           | 6   | 1.1 | -0.3 |      | 49     | 0    | 6   | 0   | 4.0  | 0.0  |
| FIN    | 230    | 0           | 4   | 1.6 | -0.1 |      | 167    | 1    | 7   | 0   | 9.6  | 0.5  |
| FWI    | 121    | 3           | 15  | 1.6 | -0.3 |      | 115    | 0    | 15  | 0   | 8.9  | -0.9 |
| GCO    | 66     | 0           | 5   | 1.5 | -0.4 |      | 58     | 0    | 100 | 0   | 12.5 | 0.5  |
| GEC    | 320    | 1           | 20  | 1.5 | 0.2  |      | 302    | 0    | 22  | 0   | 9.9  | 1.1  |
|        |        |             |     |     |      |      |        |      |     |     |      |      |
| GOJ    | 37     | 0           | 0   | 1.0 | 0.0  |      | 36     | 0    | 0   | 0   | 5.0  | 1.9  |
| GRL    | 87     | 0           | 0   | 1.3 | 0.3  |      | 80     | 1    | 3   | 0   | 5.0  | 0.5  |
| GTI    | 111    | 0           | 8   | 1.9 | 0.3  |      | 90     | 0    | 8   | 0   | 7.3  | -0.5 |
| GVA    | 60     | 0           | 3   | 1.2 | -0.4 |      | 59     | 0    | 2   | 0   | 4.1  | 0.4  |
| GVB    | 75     | 0           | 1   | 1.3 | 0.1  |      | 72     | 0    | 1   | 0   | 4.3  | 0.5  |
|        |        |             |     |     |      |      |        |      |     |     |      |      |
| GVF    | 53     | 0           | 2   | 1.2 | -0.4 |      | 50     | 0    | 2   | 0   | 4.8  | 0.0  |
| GVG    | 51     | 0           | 0   | 1.5 | -0.7 |      | 49     | 0    | 0   | 0   | 3.4  | 0.2  |
| GVH    | 65     | 0           | 5   | 1.2 | -0.1 |      | 64     | 0    | 5   | 0   | 4.2  | -0.2 |
| GVL    | 23     | 0           | 4   | 1.5 | -0.2 |      | 23     | 0    | 4   | 0   | 5.0  | 0.6  |



| IDENT. | N.REP. | TEMPERATURE |     |     |      | N.REP. | WIND |     |    |      |      |
|--------|--------|-------------|-----|-----|------|--------|------|-----|----|------|------|
|        |        | PG          | PR  | RMS | BIAS |        | PG   | PR  | PC | RMS  | BIAS |
| GVM    | 26     | 0           | 4   | 1.1 | -0.2 | 25     | 0    | 4   | 0  | 3.7  | 0.8  |
| GVR    | 154    | 0           | 3   | 1.4 | -0.1 | 148    | 0    | 3   | 0  | 4.7  | 0.3  |
| GVT    | 29     | 0           | 0   | 0.9 | -0.2 | 29     | 0    | 0   | 0  | 3.0  | 0.4  |
| GVW    | 49     | 0           | 4   | 1.3 | -0.5 | 47     | 0    | 4   | 0  | 4.1  | 0.2  |
| GVX    | 42     | 0           | 2   | 0.9 | 0.1  | 40     | 0    | 3   | 0  | 4.5  | 0.5  |
|        |        |             |     |     |      |        |      |     |    |      |      |
| GWV    | 95     | 0           | 2   | 1.2 | -0.1 | 92     | 0    | 2   | 0  | 3.9  | 0.2  |
| HBI    | 179    | 0           | 4   | 1.2 | -0.4 | 173    | 0    | 4   | 0  | 4.7  | 0.4  |
| HBJ    | 123    | 0           | 1   | 1.1 | -0.3 | 118    | 0    | 1   | 0  | 4.3  | 1.2  |
| IBE    | 1362   | 1           | 4   | 1.6 | 0.3  | 1324   | 0    | 3   | 0  | 7.3  | 0.2  |
| ICE    | 718    | 0           | 3   | 1.5 | 0.3  | 366    | 1    | 2   | 0  | 5.9  | 1.0  |
|        |        |             |     |     |      |        |      |     |    |      |      |
| ISR    | 53     | 0           | 4   | 2.0 | -0.2 | 25     | 0    | 0   | 0  | 6.0  | 0.6  |
| IWD    | 99     | 2           | 4   | 1.8 | -0.6 | 99     | 0    | 2   | 0  | 7.3  | -0.2 |
| KAC    | 85     | 0           | 5   | 1.1 | 0.6  | 82     | 0    | 5   | 0  | 4.6  | 0.6  |
| KLM    | 800    | 1           | 5   | 1.6 | 0.0  | 557    | 0    | 6   | 0  | 9.5  | 0.1  |
| LAN    | 24     | 0           | 8   | 1.2 | 0.5  | 20     | 0    | 15  | 0  | 12.6 | -1.7 |
|        |        |             |     |     |      |        |      |     |    |      |      |
| LCO    | 23     | 0           | 0   | 1.2 | -0.2 | 22     | 0    | 5   | 0  | 12.3 | 1.0  |
| LNR    | 275    | 0           | 45  | 1.1 | -0.3 | 268    | 0    | 44  | 0  | 4.0  | 0.7  |
| LOT    | 252    | 0           | 2   | 1.6 | -0.6 | 144    | 1    | 4   | 0  | 6.5  | 0.8  |
| LTU    | 484    | 1           | 5   | 1.6 | -0.1 | 325    | 0    | 6   | 0  | 8.3  | 1.1  |
| LVG    | 125    | 1           | 12  | 1.6 | 0.0  | 107    | 0    | 12  | 0  | 9.2  | 2.0  |
|        |        |             |     |     |      |        |      |     |    |      |      |
| MAS    | 45     | 0           | 0   | 1.2 | -0.4 | 38     | 0    | 0   | 0  | 4.9  | 1.5  |
| MPD    | 101    | 0           | 3   | 1.8 | 0.8  | 86     | 0    | 3   | 0  | 8.1  | -0.2 |
| MPH    | 341    | 1           | 9   | 1.9 | -0.7 | 182    | 1    | 10  | 0  | 10.9 | 0.4  |
| MSR    | 124    | 0           | 1   | 1.2 | 0.6  | 119    | 0    | 1   | 0  | 4.6  | 0.5  |
| MXJ    | 181    | 1           | 8   | 1.8 | 0.3  | 111    | 0    | 6   | 0  | 6.8  | 0.7  |
|        |        |             |     |     |      |        |      |     |    |      |      |
| MYT    | 105    | 1           | 19  | 2.4 | 0.1  | 67     | 0    | 18  | 0  | 12.7 | 0.1  |
| NAO    | 44     | 0           | 9   | 2.6 | 0.0  | 35     | 0    | 9   | 0  | 13.8 | 1.3  |
| NCA    | 31     | 0           | 0   | 1.3 | -0.1 | 25     | 0    | 4   | 0  | 6.7  | 0.9  |
| NWA    | 2066   | 0           | 5   | 1.6 | 0.1  | 1932   | 0    | 4   | 0  | 6.0  | 0.5  |
| OAE    | 177    | 1           | 17  | 1.7 | -0.1 | 72     | 0    | 29  | 0  | 14.6 | 3.4  |
|        |        |             |     |     |      |        |      |     |    |      |      |
| OOM    | 45     | 2           | 11  | 1.9 | 0.2  | 28     | 0    | 7   | 0  | 5.1  | 0.1  |
| OYK    | 451    | 0           | 43  | 1.2 | -0.3 | 435    | 0    | 43  | 0  | 4.0  | 1.0  |
| PAC    | 114    | 2           | 8   | 1.7 | 0.0  | 79     | 0    | 8   | 0  | 8.1  | 0.1  |
| PLM    | 66     | 2           | 6   | 2.0 | 0.6  | 59     | 2    | 8   | 0  | 10.9 | -0.6 |
| RAM    | 212    | 0           | 2   | 1.7 | 0.4  | 149    | 1    | 5   | 0  | 7.3  | 0.6  |
|        |        |             |     |     |      |        |      |     |    |      |      |
| RCH    | 251    | 1           | 100 | 3.0 | 0.2  | 201    | 0    | 100 | 0  | 9.8  | 1.1  |
| RRR    | 30     | 3           | 10  | 2.2 | -0.4 | 29     | 0    | 7   | 0  | 9.3  | -0.6 |
| RZO    | 118    | 2           | 3   | 1.5 | -0.4 | 99     | 0    | 4   | 0  | 6.8  | -0.4 |
| SAS    | 830    | 0           | 55  | 1.1 | -0.1 | 803    | 0    | 56  | 0  | 4.4  | 0.8  |
| SER    | 302    | 0           | 54  | 1.4 | -0.1 | 286    | 0    | 54  | 0  | 4.4  | 1.1  |
|        |        |             |     |     |      |        |      |     |    |      |      |
| SEU    | 128    | 2           | 18  | 1.8 | -0.1 | 94     | 0    | 17  | 0  | 12.6 | 0.6  |
| SIA    | 306    | 0           | 1   | 1.2 | 0.1  | 301    | 0    | 1   | 0  | 4.8  | 0.4  |
| SQC    | 301    | 0           | 1   | 1.2 | 0.3  | 295    | 0    | 1   | 0  | 5.0  | 0.2  |
| SWR    | 1315   | 0           | 4   | 1.2 | -0.4 | 1285   | 0    | 4   | 0  | 4.9  | 0.8  |
| TAP    | 217    | 0           | 1   | 1.3 | -0.3 | 187    | 1    | 4   | 0  | 7.5  | 0.0  |
|        |        |             |     |     |      |        |      |     |    |      |      |
| TCX    | 172    | 0           | 5   | 1.1 | 0.2  | 168    | 0    | 5   | 0  | 4.8  | 0.9  |
| TFL    | 101    | 1           | 13  | 1.8 | 0.2  | 73     | 1    | 15  | 0  | 9.1  | 1.0  |
| THT    | 75     | 0           | 0   | 1.2 | -0.5 | 74     | 0    | 0   | 0  | 4.0  | 0.5  |
| TSC    | 47     | 0           | 2   | 1.6 | -0.4 | 33     | 0    | 0   | 0  | 4.5  | 0.3  |
| UAE    | 305    | 0           | 1   | 1.2 | 0.3  | 295    | 0    | 1   | 0  | 4.5  | 0.4  |
|        |        |             |     |     |      |        |      |     |    |      |      |
| UAL    | 3446   | 0           | 5   | 1.2 | -0.1 | 3376   | 0    | 5   | 0  | 5.1  | 0.8  |
| UPS    | 951    | 1           | 48  | 1.6 | 0.1  | 497    | 0    | 45  | 0  | 7.0  | 0.5  |
| USA    | 1567   | 0           | 3   | 1.2 | 0.0  | 1516   | 0    | 3   | 0  | 4.8  | 0.8  |
| VIR    | 2284   | 0           | 3   | 1.2 | -0.2 | 2174   | 0    | 3   | 0  | 4.9  | 0.4  |
| VVR    | 27     | 0           | 7   | 1.3 | -0.2 | 26     | 0    | 12  | 0  | 13.4 | -3.1 |
|        |        |             |     |     |      |        |      |     |    |      |      |
| WOA    | 286    | 1           | 9   | 1.4 | 0.3  | 211    | 0    | 12  | 0  | 9.6  | 0.4  |
| ZKN    | 86     | 0           | 2   | 1.3 | -0.4 | 83     | 0    | 2   | 0  | 5.4  | 0.8  |
| ZKS    | 77     | 0           | 1   | 1.0 | -0.2 | 75     | 0    | 1   | 0  | 4.2  | 1.1  |
| 9VS    | 74     | 0           | 8   | 1.1 | 0.1  | 73     | 0    | 8   | 0  | 4.5  | 0.3  |



| IDENT.    | N.REP. | TEMPERATURE |    |     |      | N.REP. | WIND |    |    |     | BIAS |
|-----------|--------|-------------|----|-----|------|--------|------|----|----|-----|------|
|           |        | PG          | PR | RMS | BIAS |        | PG   | PR | PC | RMS |      |
| EU        | 29236  | 0           | 22 | 1.1 | 0.2  | 29236  | 0    | 22 | 0  | 4.4 | 0.4  |
| N         | 5182   | 0           | 11 | 1.4 | -0.1 | 4885   | 0    | 11 | 0  | 4.7 | 0.6  |
| S         | 27     | 0           | 0  | 1.3 | -0.3 | 27     | 0    | 0  | 0  | 4.6 | -0.7 |
| US AMDARS | 32854  | 0           | 29 | 1.3 | 0.4  | 32854  | 0    | 26 | 0  | 4.9 | 0.3  |



**TABLE 10**  
**MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)**  
**MONITORING CENTRE: EXETER**  
**MONTH: Nov 2005**

**Monitoring procedures**

|                               |                          |                                                                                                            |
|-------------------------------|--------------------------|------------------------------------------------------------------------------------------------------------|
| <b>Period</b>                 |                          | :One calendar month.                                                                                       |
| <b>Data monitored</b>         |                          | :Reports from selected radiosonde TEMPs.                                                                   |
| <b>Area monitored</b>         |                          | :0°N - 90°N, 100°W - 40°E                                                                                  |
| <b>Standard of comparison</b> |                          | :Background field from UKMO global model.                                                                  |
| <b>Position</b>               |                          | :Average latitude and longitude for period.                                                                |
| <b>Observation times</b>      |                          | :00, 12 UTC.                                                                                               |
| <b>Level monitored</b>        |                          | :100 hPa.                                                                                                  |
| <b>Element monitored</b>      |                          | :GEOPOTENTIAL HEIGHT in metres                                                                             |
| <b>Parameters monitored</b>   | :NUM OBS                 | :Number of observations available at level shown during period.                                            |
|                               | :NUM GROSS               | :Number of gross errors at level shown during period.                                                      |
|                               | :SD                      | :SD of difference of observations from background values at level shown excluding those with gross errors. |
|                               | :BIAS                    | :Mean difference of observations from background values at level shown excluding those with gross errors.  |
| <b>GROSS ERROR LIMITS</b>     | :Defined in Appendix I.1 |                                                                                                            |



| WMO<br>IDENT | OBS<br>TIME | ELM | LEV | NUM<br>OBS | NUM<br>GROSS | SD   | RMS   | BIAS  |
|--------------|-------------|-----|-----|------------|--------------|------|-------|-------|
| DBLK         | 12          | Z   | 100 | 5          | 0            | 9.4  | 12.5  | 8.2   |
| EBUQ         | 12          | Z   | 100 | 10         | 0            | 20.9 | 27.2  | -17.4 |
| ELML7        | 00          | Z   | 100 | 5          | 0            | 7.3  | 11.9  | 9.4   |
| ELML7        | 12          | Z   | 100 | 5          | 0            | 13.5 | 35.7  | 33.0  |
| FQFL         | 00          | Z   | 100 | 7          | 0            | 14.6 | 16.6  | -7.9  |
| FQFL         | 12          | Z   | 100 | 9          | 0            | 19.6 | 20.4  | 5.7   |
| FQFM         | 00          | Z   | 100 | 7          | 0            | 14.3 | 14.3  | -0.6  |
| FQFM         | 12          | Z   | 100 | 7          | 0            | 20.5 | 20.9  | 3.9   |
| HP11         | 00          | Z   | 100 | 3          | 0            | 62.9 | 66.3  | 21.0  |
| HP11         | 12          | Z   | 100 | 4          | 0            | 7.9  | 8.7   | 3.5   |
| KRPD         | 00          | Z   | 100 | 11         | 0            | 15.5 | 20.2  | 12.9  |
| KRPD         | 12          | Z   | 100 | 11         | 0            | 10.1 | 20.4  | 17.7  |
| LDWR         | 00          | Z   | 100 | 28         | 0            | 9.7  | 10.0  | -2.3  |
| LDWR         | 12          | Z   | 100 | 24         | 0            | 13.1 | 13.3  | -2.4  |
| OXVH2        | 00          | Z   | 100 | 6          | 0            | 10.8 | 11.5  | -4.2  |
| OXVH2        | 12          | Z   | 100 | 9          | 0            | 8.6  | 10.7  | 6.3   |
| OXYH2        | 00          | Z   | 100 | 5          | 0            | 21.2 | 26.1  | 15.2  |
| OXYH2        | 12          | Z   | 100 | 6          | 1            | 30.2 | 37.9  | 22.8  |
| SKUN         | 00          | Z   | 100 | 6          | 0            | 11.7 | 46.0  | 44.5  |
| SKUN         | 12          | Z   | 100 | 8          | 0            | 20.0 | 42.6  | 37.6  |
| V2BD9        | 00          | Z   | 100 | 9          | 0            | 46.2 | 56.0  | 31.6  |
| V2BD9        | 12          | Z   | 100 | 13         | 0            | 18.7 | 24.4  | 15.7  |
| V2XM         | 00          | Z   | 100 | 2          | 1            | 96.5 | 189.9 | 163.5 |
| V2XM         | 12          | Z   | 100 | 1          | 1            | 0.0  | 62.0  | 62.0  |
| WAAH         | 00          | Z   | 100 | 10         | 0            | 12.6 | 44.4  | 42.6  |
| WAAH         | 12          | Z   | 100 | 8          | 0            | 11.6 | 50.1  | 48.8  |
| WKPD         | 00          | Z   | 100 | 1          | 0            | 0.0  | 16.0  | 16.0  |
| WKPD         | 12          | Z   | 100 | 3          | 0            | 12.8 | 26.3  | 23.0  |
| WPKD         | 00          | Z   | 100 | 1          | 0            | 0.0  | 28.0  | 28.0  |
| WPKD         | 12          | Z   | 100 | 1          | 0            | 0.0  | 50.0  | 50.0  |
| ZCBE7        | 00          | Z   | 100 | 2          | 0            | 15.0 | 51.2  | 49.0  |
| ZCBE7        | 12          | Z   | 100 | 5          | 0            | 44.8 | 54.8  | 31.6  |
| ZCBP6        | 00          | Z   | 100 | 8          | 0            | 15.3 | 33.4  | 29.8  |
| ZCBP6        | 12          | Z   | 100 | 11         | 0            | 10.4 | 36.2  | 34.6  |
| 03953        | 00          | Z   | 100 | 28         | 0            | 33.5 | 35.5  | 11.5  |
| 03953        | 12          | Z   | 100 | 29         | 0            | 15.9 | 17.1  | 6.2   |
| 04018        | 00          | Z   | 100 | 28         | 0            | 12.8 | 13.6  | -4.5  |
| 04018        | 12          | Z   | 100 | 29         | 0            | 10.7 | 11.2  | -3.1  |
| 04220        | 00          | Z   | 100 | 27         | 0            | 9.6  | 9.7   | 1.8   |
| 04220        | 12          | Z   | 100 | 25         | 0            | 9.2  | 10.2  | 4.5   |
| 04270        | 00          | Z   | 100 | 26         | 0            | 15.1 | 15.6  | -3.8  |
| 04270        | 12          | Z   | 100 | 28         | 0            | 20.3 | 20.5  | -2.6  |
| 04339        | 00          | Z   | 100 | 27         | 0            | 21.3 | 21.6  | -3.4  |
| 04339        | 12          | Z   | 100 | 30         | 0            | 36.9 | 36.9  | -1.4  |
| 04360        | 00          | Z   | 100 | 28         | 0            | 8.6  | 10.6  | 6.2   |
| 04360        | 12          | Z   | 100 | 29         | 0            | 9.4  | 16.7  | 13.8  |
| 08001        | 00          | Z   | 100 | 21         | 0            | 9.8  | 19.6  | 17.0  |
| 08001        | 12          | Z   | 100 | 23         | 0            | 11.2 | 32.7  | 30.8  |
| 08508        | 00          | Z   | 100 | 14         | 0            | 12.1 | 20.1  | 16.0  |
| 08508        | 12          | Z   | 100 | 25         | 0            | 19.4 | 43.0  | 38.3  |
| 08522        | 12          | Z   | 100 | 26         | 0            | 9.9  | 15.3  | 11.7  |
| 08594        | 12          | Z   | 100 | 6          | 0            | 8.9  | 15.7  | 13.0  |
| 71600        | 00          | Z   | 100 | 28         | 0            | 13.7 | 16.0  | 8.2   |
| 71600        | 12          | Z   | 100 | 29         | 0            | 11.7 | 14.7  | 9.0   |
| 72201        | 00          | Z   | 100 | 27         | 0            | 9.5  | 13.7  | 9.9   |
| 72201        | 12          | Z   | 100 | 28         | 0            | 13.0 | 22.9  | 18.9  |
| 72402        | 00          | Z   | 100 | 27         | 0            | 7.9  | 24.9  | 23.6  |
| 72402        | 12          | Z   | 100 | 29         | 0            | 15.9 | 16.6  | 5.0   |
| 74494        | 00          | Z   | 100 | 27         | 0            | 10.5 | 17.6  | 14.1  |



|       |    |   |     |    |   |      |      |      |
|-------|----|---|-----|----|---|------|------|------|
| 74494 | 12 | Z | 100 | 30 | 0 | 9.4  | 10.0 | 3.4  |
| 78016 | 00 | Z | 100 | 27 | 0 | 13.0 | 29.0 | 25.9 |
| 78016 | 12 | Z | 100 | 30 | 0 | 12.1 | 26.9 | 24.0 |



TABLE 11

**MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)**  
**MONITORING CENTRE: EXETER**  
**MONTH: Nov 2005**

**Monitoring procedures:**

|                               |                          |                                                                                                            |
|-------------------------------|--------------------------|------------------------------------------------------------------------------------------------------------|
| <b>Period</b>                 |                          | :One calendar month.                                                                                       |
| <b>Data monitored</b>         |                          | :Reports from selected radiosonde TEMPs.                                                                   |
| <b>Area monitored</b>         |                          | :0°N - 90°N, 100°W - 40°E                                                                                  |
| <b>Standard of comparison</b> |                          | :Background field from UKMO global model.                                                                  |
| <b>Position</b>               |                          | :Average latitude and longitude for period.                                                                |
| <b>Observation times</b>      |                          | :00, 12 UTC.                                                                                               |
| <b>Level monitored</b>        |                          | :500 hPa.                                                                                                  |
| <b>Element monitored</b>      |                          | :GEOPOTENTIAL HEIGHT in metres                                                                             |
| <b>Parameters monitored</b>   | :NUM OBS                 | :Number of observations available at level shown during period.                                            |
|                               | :NUM GROSS               | :Number of gross errors at level shown during period.                                                      |
|                               | :SD                      | :SD of difference of observations from background values at level shown excluding those with gross errors. |
|                               | :BIAS                    | :Mean difference of observations from background values at level shown excluding those with gross errors.  |
| <b>GROSS ERROR LIMITS</b>     | :Defined in Appendix I.1 |                                                                                                            |



| WMO<br>IDENT | OBS<br>TIME | ELM | LEV | NUM<br>OBS | NUM<br>GROSS | SD   | RMS  | BIAS  |
|--------------|-------------|-----|-----|------------|--------------|------|------|-------|
| DBLK         | 12          | Z   | 500 | 5          | 0            | 2.9  | 2.9  | 0.2   |
| EBUQ         | 12          | Z   | 500 | 10         | 0            | 16.3 | 19.2 | -10.1 |
| ELML7        | 00          | Z   | 500 | 6          | 0            | 9.1  | 9.3  | 2.0   |
| ELML7        | 12          | Z   | 500 | 5          | 0            | 11.1 | 14.2 | 8.8   |
| FQFL         | 00          | Z   | 500 | 10         | 0            | 13.5 | 22.6 | -18.1 |
| FQFL         | 12          | Z   | 500 | 10         | 0            | 10.3 | 12.2 | -6.6  |
| FQFM         | 00          | Z   | 500 | 9          | 0            | 11.6 | 19.8 | -16.0 |
| FQFM         | 12          | Z   | 500 | 12         | 0            | 10.2 | 14.8 | -10.7 |
| HP11         | 00          | Z   | 500 | 8          | 0            | 25.7 | 27.8 | -10.8 |
| HP11         | 12          | Z   | 500 | 9          | 0            | 13.0 | 19.1 | -14.0 |
| KRPD         | 00          | Z   | 500 | 11         | 0            | 10.2 | 13.7 | -9.1  |
| KRPD         | 12          | Z   | 500 | 12         | 0            | 7.6  | 8.0  | -2.5  |
| LDWR         | 00          | Z   | 500 | 28         | 0            | 8.1  | 8.8  | -3.4  |
| LDWR         | 12          | Z   | 500 | 27         | 0            | 8.4  | 8.4  | 1.0   |
| OXVH2        | 00          | Z   | 500 | 7          | 0            | 5.1  | 9.8  | -8.4  |
| OXVH2        | 12          | Z   | 500 | 9          | 0            | 6.5  | 6.5  | -0.8  |
| OXYH2        | 00          | Z   | 500 | 6          | 0            | 11.3 | 17.2 | 13.0  |
| OXYH2        | 12          | Z   | 500 | 9          | 0            | 27.7 | 27.7 | -2.2  |
| SKUN         | 00          | Z   | 500 | 7          | 0            | 7.6  | 24.8 | 23.6  |
| SKUN         | 12          | Z   | 500 | 9          | 0            | 6.5  | 28.2 | 27.4  |
| V2BD9        | 00          | Z   | 500 | 11         | 0            | 10.3 | 11.0 | -4.1  |
| V2BD9        | 12          | Z   | 500 | 14         | 0            | 12.5 | 13.3 | -4.4  |
| V2XM         | 00          | Z   | 500 | 3          | 0            | 21.6 | 61.9 | 58.0  |
| V2XM         | 12          | Z   | 500 | 2          | 0            | 11.5 | 54.7 | 53.5  |
| WAAH         | 00          | Z   | 500 | 12         | 0            | 12.9 | 25.8 | 22.4  |
| WAAH         | 12          | Z   | 500 | 10         | 0            | 7.8  | 30.8 | 29.8  |
| WKPD         | 00          | Z   | 500 | 1          | 0            | 0.0  | 1.0  | 1.0   |
| WKPD         | 12          | Z   | 500 | 3          | 0            | 9.3  | 10.7 | -5.3  |
| WPKD         | 00          | Z   | 500 | 1          | 0            | 0.0  | 5.0  | -5.0  |
| WPKD         | 12          | Z   | 500 | 1          | 0            | 0.0  | 9.0  | 9.0   |
| ZCBE7        | 00          | Z   | 500 | 2          | 0            | 2.0  | 22.1 | 22.0  |
| ZCBE7        | 12          | Z   | 500 | 5          | 0            | 37.2 | 37.2 | -1.2  |
| ZCBP6        | 00          | Z   | 500 | 8          | 0            | 6.3  | 21.8 | 20.9  |
| ZCBP6        | 12          | Z   | 500 | 12         | 0            | 8.5  | 31.2 | 30.0  |
| 03953        | 00          | Z   | 500 | 27         | 1            | 8.8  | 9.9  | -4.6  |
| 03953        | 12          | Z   | 500 | 30         | 0            | 8.4  | 8.6  | 1.7   |
| 04018        | 00          | Z   | 500 | 28         | 0            | 8.0  | 8.2  | -2.0  |
| 04018        | 12          | Z   | 500 | 29         | 0            | 10.1 | 10.2 | -1.5  |
| 04220        | 00          | Z   | 500 | 27         | 0            | 6.5  | 6.7  | 1.8   |
| 04220        | 12          | Z   | 500 | 26         | 0            | 7.9  | 8.0  | -1.2  |
| 04270        | 00          | Z   | 500 | 27         | 0            | 11.6 | 12.4 | -4.5  |
| 04270        | 12          | Z   | 500 | 29         | 0            | 15.9 | 16.5 | -4.4  |
| 04339        | 00          | Z   | 500 | 28         | 0            | 18.9 | 19.1 | -2.6  |
| 04339        | 12          | Z   | 500 | 30         | 0            | 21.7 | 21.7 | -0.5  |
| 04360        | 00          | Z   | 500 | 28         | 0            | 9.2  | 9.6  | -2.7  |
| 04360        | 12          | Z   | 500 | 29         | 0            | 9.0  | 9.3  | 2.3   |
| 08001        | 00          | Z   | 500 | 25         | 0            | 7.2  | 7.2  | -0.1  |
| 08001        | 12          | Z   | 500 | 27         | 0            | 7.5  | 7.9  | 2.4   |
| 08508        | 00          | Z   | 500 | 15         | 0            | 6.7  | 12.1 | -10.1 |
| 08508        | 12          | Z   | 500 | 28         | 0            | 9.3  | 9.9  | -3.4  |
| 08522        | 12          | Z   | 500 | 26         | 0            | 6.3  | 12.0 | -10.2 |
| 08594        | 12          | Z   | 500 | 6          | 0            | 4.4  | 4.5  | -0.5  |
| 71600        | 00          | Z   | 500 | 28         | 0            | 6.5  | 7.9  | -4.5  |
| 71600        | 12          | Z   | 500 | 29         | 0            | 8.6  | 9.1  | -3.1  |
| 72201        | 00          | Z   | 500 | 27         | 0            | 4.3  | 8.1  | -6.8  |
| 72201        | 12          | Z   | 500 | 29         | 0            | 4.5  | 7.2  | -5.7  |
| 72402        | 00          | Z   | 500 | 27         | 0            | 5.1  | 5.1  | 0.1   |
| 72402        | 12          | Z   | 500 | 29         | 0            | 9.1  | 9.7  | -3.3  |
| 74494        | 00          | Z   | 500 | 27         | 0            | 7.0  | 7.8  | -3.5  |
| 74494        | 12          | Z   | 500 | 30         | 0            | 6.7  | 6.8  | -0.9  |



|       |    |   |     |    |   |     |     |     |
|-------|----|---|-----|----|---|-----|-----|-----|
| 78016 | 00 | Z | 500 | 27 | 0 | 5.2 | 6.0 | 3.0 |
| 78016 | 12 | Z | 500 | 30 | 0 | 6.3 | 7.3 | 3.6 |



**TABLE 12**  
**MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)**  
**MONITORING CENTRE: EXETER**  
**MONTH: Nov 2005**

**Monitoring procedures**

|                               |              |                                                                                                                                 |
|-------------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>Period</b>                 |              | :One calendar month.                                                                                                            |
| <b>Data monitored</b>         |              | :Reports from selected radiosonde TEMPs.                                                                                        |
| <b>Area monitored</b>         |              | :0°N - 90°N, 100°W - 40°E                                                                                                       |
| <b>Standard of comparison</b> |              | :Background field from UKMO global model.                                                                                       |
| <b>Position</b>               |              | :Average latitude and longitude for period.                                                                                     |
| <b>Observation times</b>      |              | :00, 12 UTC.                                                                                                                    |
| <b>Level monitored</b>        |              | :100 hPa.                                                                                                                       |
| <b>Element monitored</b>      |              | :VECTOR WIND in m s <sup>-1</sup>                                                                                               |
| <b>Parameters monitored</b>   | :NUM OBS     | :Number of observations available at level shown during period.                                                                 |
|                               | :NUM GROSS   | :Number of gross errors at level shown during period.                                                                           |
|                               | :UBIAS,VBIAS | :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors. |
|                               | :RMS         | :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.           |

**GROSS ERROR LIMITS** :Defined in Appendix I.2

| WMO<br>IDENT | OBS<br>TIME | ELM | LEV | NUM<br>OBS | NUM<br>GROSS | %<br>REJ | RMS  | UBIAS | VBIAS |
|--------------|-------------|-----|-----|------------|--------------|----------|------|-------|-------|
| DBLK         | 12          | V   | 100 | 5          | 0            | 0        | 4.7  | -2.7  | -1.3  |
| EBUQ         | 12          | V   | 100 | 9          | 0            | 0        | 7.0  | 0.9   | 1.5   |
| ELML7        | 00          | V   | 100 | 5          | 0            | 0        | 5.1  | 1.0   | -0.5  |
| ELML7        | 12          | V   | 100 | 5          | 0            | 0        | 3.4  | 0.5   | 1.3   |
| FQFL         | 00          | V   | 100 | 7          | 0            | 0        | 4.5  | 0.6   | -1.6  |
| FQFL         | 12          | V   | 100 | 9          | 0            | 0        | 5.4  | -1.0  | -0.3  |
| FQFM         | 00          | V   | 100 | 7          | 0            | 0        | 3.7  | -0.9  | -0.8  |
| FQFM         | 12          | V   | 100 | 7          | 0            | 0        | 3.5  | -1.7  | 0.6   |
| HP11         | 00          | V   | 100 | 3          | 0            | 0        | 4.4  | 1.5   | 2.2   |
| HP11         | 12          | V   | 100 | 4          | 0            | 0        | 3.4  | 0.2   | 0.6   |
| KRPD         | 00          | V   | 100 | 11         | 0            | 0        | 4.5  | 0.7   | 0.5   |
| KRPD         | 12          | V   | 100 | 10         | 0            | 0        | 4.9  | -0.3  | 1.9   |
| LDWR         | 00          | V   | 100 | 28         | 0            | 0        | 3.8  | 0.1   | 0.3   |
| LDWR         | 12          | V   | 100 | 22         | 0            | 0        | 3.3  | 0.4   | 0.0   |
| OXVH2        | 00          | V   | 100 | 4          | 0            | 0        | 2.6  | 1.4   | 0.4   |
| OXVH2        | 12          | V   | 100 | 5          | 0            | 0        | 2.4  | -0.2  | 0.5   |
| OXYH2        | 00          | V   | 100 | 4          | 0            | 0        | 5.8  | -0.1  | -3.0  |
| OXYH2        | 12          | V   | 100 | 3          | 0            | 0        | 2.5  | -1.4  | -1.1  |
| SKUN         | 00          | V   | 100 | 6          | 0            | 0        | 4.4  | -0.6  | -1.1  |
| SKUN         | 12          | V   | 100 | 8          | 0            | 0        | 4.3  | 0.3   | 0.9   |
| V2BD9        | 00          | V   | 100 | 9          | 0            | 0        | 4.3  | 0.5   | 0.9   |
| V2BD9        | 12          | V   | 100 | 12         | 0            | 0        | 5.2  | -0.1  | 1.2   |
| V2XM         | 00          | V   | 100 | 1          | 0            | 0        | 10.0 | 9.9   | -1.7  |
| WAAH         | 00          | V   | 100 | 10         | 0            | 0        | 4.4  | 0.3   | -1.8  |
| WAAH         | 12          | V   | 100 | 8          | 0            | 0        | 3.2  | -0.7  | 0.9   |
| WKPD         | 00          | V   | 100 | 1          | 0            | 0        | 6.0  | -4.0  | -4.4  |
| WKPD         | 12          | V   | 100 | 3          | 0            | 0        | 2.6  | 2.0   | 0.1   |
| WPKD         | 00          | V   | 100 | 1          | 0            | 0        | 3.9  | -3.1  | -2.3  |
| WPKD         | 12          | V   | 100 | 1          | 0            | 0        | 4.0  | -4.0  | -0.3  |
| ZCBP6        | 00          | V   | 100 | 8          | 0            | 0        | 3.8  | 1.6   | 0.1   |
| ZCBP6        | 12          | V   | 100 | 10         | 0            | 0        | 3.5  | -0.3  | 1.2   |
| 03953        | 00          | V   | 100 | 27         | 0            | 0        | 3.5  | 0.4   | 0.6   |
| 03953        | 12          | V   | 100 | 29         | 0            | 0        | 2.8  | -0.5  | -0.2  |
| 04018        | 00          | V   | 100 | 28         | 0            | 0        | 3.8  | 0.3   | 0.1   |
| 04018        | 12          | V   | 100 | 29         | 0            | 0        | 3.1  | 0.1   | 0.2   |
| 04220        | 00          | V   | 100 | 27         | 0            | 0        | 4.3  | 0.1   | -0.4  |
| 04220        | 12          | V   | 100 | 25         | 0            | 0        | 4.5  | 0.4   | -0.3  |
| 04270        | 00          | V   | 100 | 26         | 0            | 0        | 5.0  | 0.4   | -1.4  |
| 04270        | 12          | V   | 100 | 28         | 0            | 0        | 4.5  | 0.2   | 0.1   |
| 04339        | 00          | V   | 100 | 25         | 0            | 20       | 13.2 | 6.4   | -2.3  |
| 04339        | 12          | V   | 100 | 28         | 0            | 7        | 10.3 | 3.2   | -0.3  |
| 04360        | 00          | V   | 100 | 21         | 0            | 0        | 4.6  | -1.2  | -0.6  |
| 04360        | 12          | V   | 100 | 23         | 0            | 0        | 4.6  | 0.7   | 0.1   |
| 08001        | 00          | V   | 100 | 19         | 0            | 100      | 4.6  | -0.5  | -0.2  |
| 08001        | 12          | V   | 100 | 23         | 0            | 100      | 6.4  | -0.9  | -0.7  |
| 08508        | 00          | V   | 100 | 12         | 0            | 0        | 5.0  | -1.8  | -0.7  |
| 08508        | 12          | V   | 100 | 15         | 0            | 0        | 4.1  | 1.1   | 0.6   |
| 08522        | 12          | V   | 100 | 24         | 0            | 0        | 5.0  | 1.2   | 0.8   |
| 08594        | 12          | V   | 100 | 6          | 0            | 100      | 4.8  | 1.1   | -2.7  |
| 71600        | 00          | V   | 100 | 28         | 0            | 0        | 4.3  | -0.2  | 0.0   |
| 71600        | 12          | V   | 100 | 29         | 0            | 0        | 4.4  | 0.7   | 0.7   |
| 72201        | 00          | V   | 100 | 27         | 0            | 0        | 3.7  | 0.1   | -0.6  |
| 72201        | 12          | V   | 100 | 28         | 0            | 0        | 3.9  | -0.1  | 0.1   |
| 72402        | 00          | V   | 100 | 27         | 0            | 0        | 4.6  | 0.2   | -0.8  |
| 72402        | 12          | V   | 100 | 30         | 0            | 0        | 4.6  | 0.4   | 0.4   |
| 74494        | 00          | V   | 100 | 25         | 0            | 0        | 5.3  | -2.2  | 0.8   |
| 74494        | 12          | V   | 100 | 29         | 0            | 3        | 4.5  | -2.4  | 0.4   |
| 78016        | 00          | V   | 100 | 27         | 0            | 0        | 4.3  | -1.1  | -0.4  |
| 78016        | 12          | V   | 100 | 30         | 0            | 0        | 5.4  | -0.4  | 1.3   |





**TABLE 13**  
**MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)**  
**MONITORING CENTRE: EXETER**  
**MONTH: Nov 2005**

**Monitoring procedures**

|                        |               |                                                                                                                                |
|------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------|
| Period                 |               | :One calendar month.                                                                                                           |
| Data monitored         |               | :Reports from selected radiosonde TEMPs.                                                                                       |
| Area monitored         |               | :0°N - 90°N, 100°W - 40°E                                                                                                      |
| Standard of comparison |               | :Background field from UKMO global model.                                                                                      |
| Position               |               | :Average latitude and longitude for period.                                                                                    |
| Observation times      |               | :00, 12 UTC.                                                                                                                   |
| Level monitored        |               | :500 hPa.                                                                                                                      |
| Element monitored      |               | :VECTOR WIND in $\text{m s}^{-1}$                                                                                              |
| Parameters monitored   | :NUM OBS      | :Number of observations available at level shown during period.                                                                |
|                        | :NUM GROSS    | :Number of gross errors at level shown during period.                                                                          |
|                        | :UBIAS,VBIAS: | Mean difference of observations of U and V components from background values at level shown excluding those with gross errors. |
|                        | :RMS          | :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.          |

**GROSS ERROR LIMITS** :Defined in Appendix I.2



| WMO<br>IDENT | OBS<br>TIME | ELM | LEV | NUM<br>OBS | NUM<br>GROSS | %<br>REJ | RMS  | UBIAS | VBIAS |
|--------------|-------------|-----|-----|------------|--------------|----------|------|-------|-------|
| DBLK         | 12          | V   | 500 | 5          | 0            | 0        | 4.0  | -0.3  | 1.3   |
| EBUQ         | 12          | V   | 500 | 9          | 0            | 0        | 5.6  | 2.4   | -1.0  |
| ELML7        | 00          | V   | 500 | 6          | 0            | 0        | 3.6  | 0.1   | 2.2   |
| ELML7        | 12          | V   | 500 | 5          | 0            | 0        | 4.3  | 0.6   | -2.9  |
| FQFL         | 00          | V   | 500 | 10         | 0            | 0        | 3.6  | -0.5  | -1.6  |
| FQFL         | 12          | V   | 500 | 10         | 0            | 0        | 3.9  | -1.6  | -1.2  |
| FQFM         | 00          | V   | 500 | 9          | 0            | 0        | 2.8  | 0.4   | 0.4   |
| FQFM         | 12          | V   | 500 | 12         | 0            | 0        | 4.4  | -0.3  | 0.0   |
| HP11         | 00          | V   | 500 | 8          | 0            | 0        | 6.0  | -0.9  | -0.3  |
| HP11         | 12          | V   | 500 | 9          | 0            | 0        | 5.1  | -2.1  | 0.9   |
| KRPD         | 00          | V   | 500 | 10         | 0            | 0        | 2.9  | 0.6   | 0.2   |
| KRPD         | 12          | V   | 500 | 12         | 0            | 0        | 3.8  | 1.6   | 0.2   |
| LDWR         | 00          | V   | 500 | 28         | 0            | 0        | 4.6  | 0.9   | 0.7   |
| LDWR         | 12          | V   | 500 | 27         | 0            | 0        | 4.5  | 1.4   | -0.3  |
| OXVH2        | 00          | V   | 500 | 5          | 0            | 0        | 2.8  | -0.2  | -1.7  |
| OXVH2        | 12          | V   | 500 | 5          | 0            | 0        | 2.4  | -0.6  | 0.2   |
| OXYH2        | 00          | V   | 500 | 5          | 0            | 0        | 4.9  | -2.6  | 0.8   |
| OXYH2        | 12          | V   | 500 | 6          | 0            | 0        | 4.3  | -0.5  | 0.0   |
| SKUN         | 00          | V   | 500 | 7          | 0            | 0        | 3.6  | 0.3   | -1.3  |
| SKUN         | 12          | V   | 500 | 9          | 0            | 0        | 3.7  | -0.9  | -0.3  |
| V2BD9        | 00          | V   | 500 | 11         | 0            | 0        | 4.5  | -0.1  | 0.3   |
| V2BD9        | 12          | V   | 500 | 14         | 0            | 7        | 8.0  | 0.1   | -0.4  |
| V2XM         | 00          | V   | 500 | 1          | 0            | 0        | 2.7  | -2.7  | -0.5  |
| WAAH         | 00          | V   | 500 | 12         | 0            | 0        | 4.1  | -1.1  | -0.4  |
| WAAH         | 12          | V   | 500 | 10         | 0            | 0        | 3.9  | -0.9  | -0.1  |
| WKPD         | 00          | V   | 500 | 1          | 0            | 0        | 1.1  | -1.0  | -0.4  |
| WKPD         | 12          | V   | 500 | 3          | 0            | 0        | 3.6  | 1.5   | -1.0  |
| WPKD         | 00          | V   | 500 | 1          | 0            | 0        | 3.0  | -2.7  | 1.3   |
| WPKD         | 12          | V   | 500 | 1          | 0            | 0        | 0.7  | 0.6   | -0.3  |
| ZCBP6        | 00          | V   | 500 | 8          | 0            | 0        | 4.7  | 0.9   | 0.7   |
| ZCBP6        | 12          | V   | 500 | 11         | 0            | 0        | 3.3  | 0.5   | 0.9   |
| 03953        | 00          | V   | 500 | 28         | 0            | 0        | 4.1  | 0.9   | 0.0   |
| 03953        | 12          | V   | 500 | 30         | 0            | 0        | 4.5  | 0.0   | -0.2  |
| 04018        | 00          | V   | 500 | 28         | 0            | 0        | 4.5  | -0.5  | 0.8   |
| 04018        | 12          | V   | 500 | 29         | 0            | 0        | 4.0  | 0.2   | -0.1  |
| 04220        | 00          | V   | 500 | 27         | 0            | 0        | 5.1  | 0.1   | -0.5  |
| 04220        | 12          | V   | 500 | 26         | 0            | 0        | 4.3  | 0.6   | -0.1  |
| 04270        | 00          | V   | 500 | 27         | 0            | 0        | 5.2  | 0.5   | 0.1   |
| 04270        | 12          | V   | 500 | 29         | 0            | 0        | 3.7  | 0.1   | 0.5   |
| 04339        | 00          | V   | 500 | 27         | 0            | 22       | 13.7 | -1.9  | 1.5   |
| 04339        | 12          | V   | 500 | 29         | 0            | 13       | 10.9 | -1.5  | 0.3   |
| 04360        | 00          | V   | 500 | 21         | 0            | 4        | 7.1  | -1.5  | 0.3   |
| 04360        | 12          | V   | 500 | 23         | 0            | 0        | 4.4  | 0.0   | 0.3   |
| 08001        | 00          | V   | 500 | 24         | 0            | 100      | 4.7  | 0.0   | 1.2   |
| 08001        | 12          | V   | 500 | 27         | 0            | 100      | 6.0  | -0.7  | -0.7  |
| 08508        | 00          | V   | 500 | 13         | 0            | 0        | 4.0  | 0.3   | -0.6  |
| 08508        | 12          | V   | 500 | 16         | 0            | 0        | 3.0  | 0.3   | 0.2   |
| 08522        | 12          | V   | 500 | 24         | 0            | 0        | 5.9  | 1.6   | -0.2  |
| 08594        | 12          | V   | 500 | 6          | 0            | 0        | 4.1  | -1.0  | 2.1   |
| 71600        | 00          | V   | 500 | 28         | 0            | 0        | 4.9  | -1.1  | 1.1   |
| 71600        | 12          | V   | 500 | 29         | 0            | 0        | 3.4  | -0.1  | 0.8   |
| 72201        | 00          | V   | 500 | 27         | 0            | 0        | 3.0  | 0.4   | 1.0   |
| 72201        | 12          | V   | 500 | 29         | 0            | 0        | 2.6  | -0.1  | 0.0   |
| 72402        | 00          | V   | 500 | 27         | 0            | 0        | 2.8  | 0.2   | -0.3  |
| 72402        | 12          | V   | 500 | 30         | 0            | 0        | 3.1  | 0.4   | 0.0   |
| 74494        | 00          | V   | 500 | 27         | 0            | 0        | 4.7  | -2.1  | 1.1   |
| 74494        | 12          | V   | 500 | 30         | 0            | 0        | 4.6  | -2.2  | 0.2   |
| 78016        | 00          | V   | 500 | 27         | 0            | 0        | 3.7  | 0.5   | -0.2  |
| 78016        | 12          | V   | 500 | 30         | 0            | 0        | 3.1  | 0.4   | 0.1   |





## APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

| Level (hPa) | Geopotential height (metres) |
|-------------|------------------------------|
| 1000        | 100                          |
| 850         | 100                          |
| 700         | 100                          |
| 500         | 150                          |
| 400         | 175                          |
| 300         | 200                          |
| 250         | 225                          |
| 200         | 250                          |
| 150         | 275                          |
| 100         | 300                          |
| 70          | 375                          |
| 50          | 400                          |
| 30          | 450                          |

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

| Level (hPa) | Weight |
|-------------|--------|
| 1000        | 3.70   |
| 850         | 3.40   |
| 700         | 2.90   |
| 500         | 2.20   |
| 400         | 1.90   |
| 300         | 1.60   |
| 250         | 1.50   |
| 200         | 1.37   |
| 150         | 1.19   |
| 100         | 1.00   |
| 70          | 0.87   |
| 50          | 0.80   |
| 30          | 0.64   |

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

| Level (hPa) | Windspeed $\text{m s}^{-1}$ |
|-------------|-----------------------------|
| 1000        | 35                          |
| 850         | 35                          |
| 700         | 40                          |
| 500         | 45                          |
| 400         | 50                          |
| 300         | 60                          |
| 250         | 60                          |
| 200         | 50                          |
| 150         | 50                          |
| 100         | 45                          |

